NTRACTORS and ENGINEERS

A Buttenheim Publication

AZINE OF MODERN CONSTRUCTION JUNE 1960

JUN 13 1960

SCIENCES

efficiency and economy issue

Highlighting the 6 Big M's of Construction



machinery



materials



methods



maintenance



men



management

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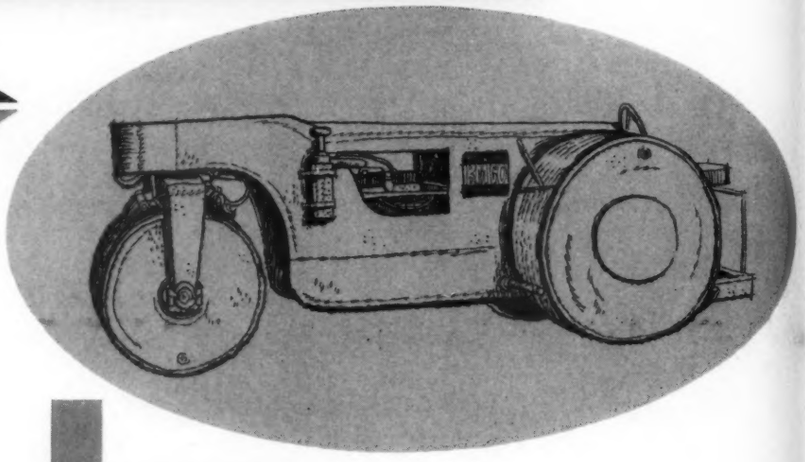
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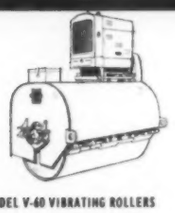
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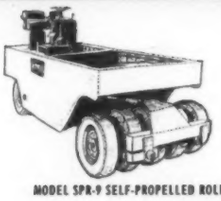
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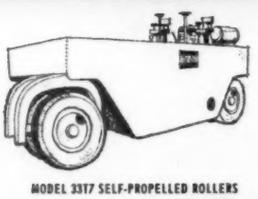
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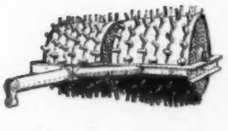
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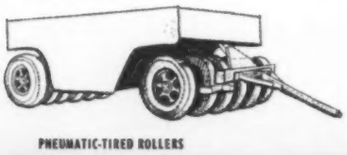
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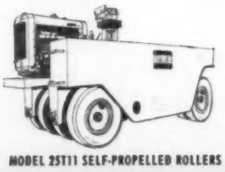
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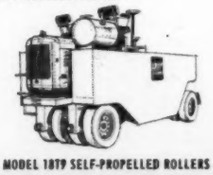
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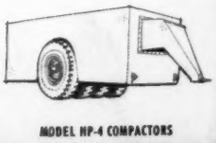
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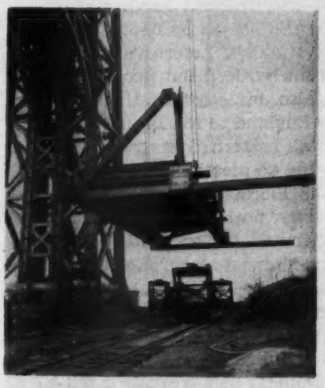
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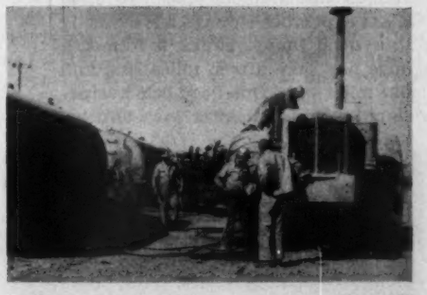
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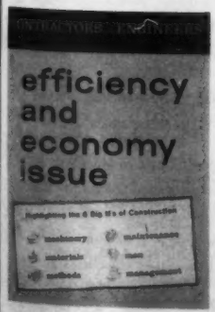
Smooth slip-form paving job. Page 44



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COVER:

Efficiency and economy are watchwords in any business, and particularly in construction. This issue is geared to these watchwords as they are applied to machinery, materials, methods, maintenance, men, and management—the six big M's of construction. Articles and case histories illustrate their applications.

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Editorial



The worth of public works

Early this spring, floodwaters poured over the banks of many rivers in this country, and in some instances broke through their bordering dikes and levees. The snows of last winter were among the greatest in the past fifty years, and the mighty Mississippi River, for one, reached heights that had not been touched by floods since 1947. The Midwest, America's heartland, was hit hardest. But flood damage was also inflicted on the land from New England to the Deep South, as almost all eastern rivers ran bank full from the Connecticut to the Apalachicola in Florida.

Fortunately, no loss of life was directly attributed to the floods. However, in the Midwest alone, one million acres in land were under water. Over 30,000 persons either had to flee their homes or were adversely affected in some way by the rising waters that resulted in property damage costing millions of dollars. Illinois, Iowa, Missouri, and Nebraska bore the brunt of the swollen waters. In one place where the Mississippi broke through a levee along its central Illinois banks, it formed a huge new lake fifteen miles long and five miles wide. One flood belt was declared a major disaster area entitled to federal aid.

What would have happened in this spring of 1960 without the far-flung protective system of dams, levees, revetments, floodways, and miscellaneous flood-control structures is not pleasant to contemplate. Many lives would undoubtedly have been lost. Property damage would have been tremendous. Millions of acres of valuable farm land would have been taken out of cultivation. In some areas food would have been scarce, and the shortage would have resulted in a price rise.

When a major disaster or catastrophe is averted, not many pause to think how it was prevented. In this hurly-burly, workaday world, the people take for granted such public works as flood control. They are too concerned with their own day-to-day problems to give much thought to which dams or levees are being built in what places, since most of them will never be visited, anyway. Yet such works of men are no less important to the public welfare than the highways and bridges over which the public may travel, and of which it is more aware.

Maybe this unawareness is why proposals for public-works improvements often get short shrift, at times, from both the people and the politicians. The latter, of course, are more alert to the political advantages to be derived from either the support of or opposition to such a program at a particular time and for a particular constituency. But both the public and its representatives must be kept aware of our fast burgeoning population with its ever increasing demands on our present facilities. The more people we have, the more roads, bridges, schools, hospitals, water and sanitation facilities, housing projects, parks and recreation areas we must supply. New public works must be built, while those we now have must be maintained well, and also enlarged.

As always, the money to finance such construction is the stumbling block to the realization of these necessary projects. The military budget now takes the biggest bite from the tax dollar, and one can hardly expect expenditures for defense to lessen in the light of our present troubled foreign relations. Also competing for the tax dollar are sundry proposals for social services that are certainly controversial yet have strong political backing.

What can the construction industry do in this regard? It can certainly help to make the public aware of the increasing needs for public works to keep pace with our nation's growth. If we fall behind now, the cost to catch up in the years ahead will only be greater. The industry can also help by holding costs down by every means possible. In this way, more work can be undertaken with the funds provided, assuring the public the most for its money.

In this regard of holding costs down, we suggest a careful reading of this issue, which is devoted to efficiency and economy of construction. In our feature articles, case histories, new products and advertising, you are sure to pick up some new and timely ideas for saving time and money in your construction operations.

CONTRACTORS and ENGINEERS

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Business Comment

Competition

Since the Federal-Aid Highway Act of 1956, the states have let over $14 billion of road contracts. The road-building industry has completed well over 100,000 miles of work on the nation's federal-aid systems at a construction cost of over $8 billion. More than 10,000 contracts, involving nearly $6 billion, are currently under way.

The industry's record of accomplishment includes 6,000 miles of construction on the Interstate System. Counting toll and free roads that have been incorporated into the system, more than 7,570 of the 41,000 miles of this national network of superhighways are now open to traffic. The remarkable thing about this record is that it has not been accompanied by the dislocating rise in construction costs so widely predicted when the road program began.

According to the index of average bid prices compiled by the Bureau of Public Roads, the cost of highway construction in the first quarter of 1960 dropped 2.7 per cent below that of the previous quarter. In that earlier period the index had risen slightly by six-tenths of one per cent.

Small fluctuations of this kind have been the rule for the past two years, and have set a trend of stabilization in prices that appears likely to continue. The latest decrease places the index 4.6 per cent below last year.

The low point of recent years was 125.5 (1946=100), reached in the second quarter of 1955. The high point was 143.4 reached in the fourth quarter of 1957. This was an increase of 14.3 per cent over 1955. But measured from the same low point to the current index level, the net increase is now only 7.1 per cent.

Here is the record since 1958:

	Index	% Change
2nd quarter, 1958	141.6	+ 0.8
3rd quarter, 1958	139.2	– 1.7
4th quarter, 1958	141.6	+ 1.7
1st quarter, 1959	140.8	– 0.6
2nd quarter, 1959	137.1	– 2.7
3rd quarter, 1959	137.3	+ 0.2
4th quarter, 1959	138.4	+ 0.6
1st quarter, 1960	134.4	– 2.7

How is it that prices have declined in a period when road construction volume has been increasing rapidly? Another BPR report furnishes one clue: competition.

A total of 3,104, or 46 per cent, of the 6,743 federal-aid road contracts awarded in 1959 was for amounts up to $100,000. A total of 4,684, or 69 per cent, was for $250,000 or less. Ninety per cent were for $1 million or less. Only 670 exceeded $1 million.

This policy of awarding contracts in relatively small units has made it possible for medium and small firms to participate in the road program, and a great many have. To date, 6,000 firms have been recorded as bidding on or performing work on federal-aid primary jobs alone.

The records of the Bureau of Public Roads show that, altogether, there are now more than 10,000 different contracting organizations qualified by the various state highway departments or otherwise recognized as competent to bid on highway work.

REPORT ON OPENING OF BIDS BY SIZE OF CONTRACT
Calendar Year 1959
All Federal-aid Highway Construction Contracts
(including Miscellaneous)

Size of Contract (Dollars)	Total Number of Contracts	Percent of Total Contracts	Total Amount of Low Bids	Percentage of Total Value
0-24,999	1,037	15.38	$ 13,382,800	0.53
25,000-49,999	898	13.32	33,367,300	1.33
50,000-99,999	1,169	17.34	84,765,900	3.38
100,000-249,999	1,580	23.43	256,875,100	10.22
250,000-499,999	822	12.19	292,307,300	11.63
500,000-999,999	567	8.41	399,414,100	15.89
1,000,000-1,999,999	419	6.21	593,143,800	23.60
2,000,000-2,999,999	138	2.05	332,651,600	13.24
3,000,000-3,999,999	56	0.83	195,055,700	7.76
4,000,000-4,999,999	29	0.43	130,790,300	5.21
5,000,000-9,999,999	28	0.41	181,160,100	7.21
over 10,000,000	0	0	0	0
Totals	6,743	100.00	$2,512,914,000	100.00

CONTRACTOR: MINNESOTA VALLEY IMPROVEMENT CO., GRANITE FALLS, MINN.



The load-carrying capacity of Minnesota Trunk Highway No. 7 was doubled by resurfacing it with 7½ inches of hot-mix with Texaco Asphalt.



Cross-section assembled in the laboratory from specimens cut from the road of 7½-inches of hot-mix with Texaco Asphalt. The four layers from the top down are the 1½-inch surface, 1½-inch binder course and 4½-inch base (laid in two courses).

ASPHALT doubles a highway's strength

The original pavement on this Minnesota trunk highway was laid in 1952. It was designed to carry 1,000 vehicles a day and a maximum axle load in spring of five tons. The pavement consisted of a 9-inch gravel base and subbase, topped by a 1½-inch surface of asphalt hot-mix.

Last year, this highway's load-carrying capacity was increased to 2,000 vehicles a day and its maximum allowable axle load in spring increased to nine tons. This was accomplished at moderate cost in a minimum of time by resurfacing the 1952 pavement with 7½ inches of hot-mix, using Texaco Asphalt. The new pavement was composed of a 4½-inch asphalt base course, a 1½-inch binder course and a 1½-inch wearing surface.

This Minnesota project is an excellent example of how perfectly Asphalt lends itself to stage construction of a highway, adding strength when called for by increased traffic, while distributing cost over the years.

Whatever your own paving problem, there is a heavy-duty, intermediate or low-cost type of Texaco Asphalt construction exactly suited to your requirements. Our 55 years of Asphalt experience is at your service. If you would like to discuss your paving needs with a Texaco Asphalt field representative, write to our nearest office listed below.



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Surveying Washington



by E. E. Halmos, Jr.

Hearings may result in tighter inspection

You don't have to be an expert, either on construction or on politics, to see the basic trend in the "second round" of hearings by Rep. John A. Blatnik's special House Public Works Committee into the interstate highway program.

The trend was definitely political, an attempt to show waste and inefficiency in the conduct of the multi-billion program that could be charged to the present administration.

But don't minimize the importance to you, as a contractor. The committee's hearings did center on what appears to be a real scandal in construction of the 13-mile "Skelly bypass" around the southeast section of Tulsa, Okla. This was a situation in which paid-for quantities of material apparently weren't placed as required and in amounts required by the engineers' specifications.

Despite this fact—attested to by the Bureau of Public Roads and an independent testing group employed by the Tulsa county prosecutor's office—the road has performed reasonably well under traffic for as much as four years. But the committee made the point that the results may not justify the payments, anyway; it has been charged that the contractor was paid for a good deal more subbase material and other work than he actually put into the pavement. Differences were made up by a heavier base course, in some instances, but the pay for the base course was less than the contract amount for the subbase. (It is reported that the committee staff has developed some 20 similar cases elsewhere in the U. S.)

What the hearings did show up—and nobody in Washington is minimizing the importance of this—is what appears to be some fairly inept and inexact testing and inspection work by the Oklahoma highway department during construction. What makes this important is that the BPR depended on these tests almost exclusively, and that makes the Bureau appear to be equally lax in its own supervision.

Result could be a general tightening down on inspection procedures, with greater insistence on exact compliance with specifications.

Proposed bill would demand use of subs named in bid

Contractor groups are particularly unhappy about the reappearance of one of those perennial bills concerning prime-sub contractor relations.

The bill in question isn't rated any



chance of passage this time, but it has some peculiar teeth that previous measures haven't had. Prime contractors could wind up with jail terms and heavy fines for failure to use named subs. What's more, background checking indicates it wasn't proposed—as has been usual—by mechanical contractors, but by a group of [illegible] angered by an "outsider" who [illegible] local contract in Michigan.

Introduced by Rep. E. A. Cederberg (R., Mich.) the bill (HR 11[illegible]) would require that bids on any government projects contain a list of names, addresses, and bid amounts of all subs; that the prime be subject to penalties under his contract for failing to use any of the named subs or for paying subs less than the amounts quoted in his bid. In addition—and this is important—the prime would be subject to fines of $10,000 and two years in jail.

As you know, a voluntary system of naming and using subs has been advocated by some members of Associated General Contractors, as a means of ending bid shopping. But this package is offered in return for agreements from mechanical subs that they'll drop their attempts to get separate contracts for their work.

The Cederberg bill is something else again.

Better information asked of Census Bureau

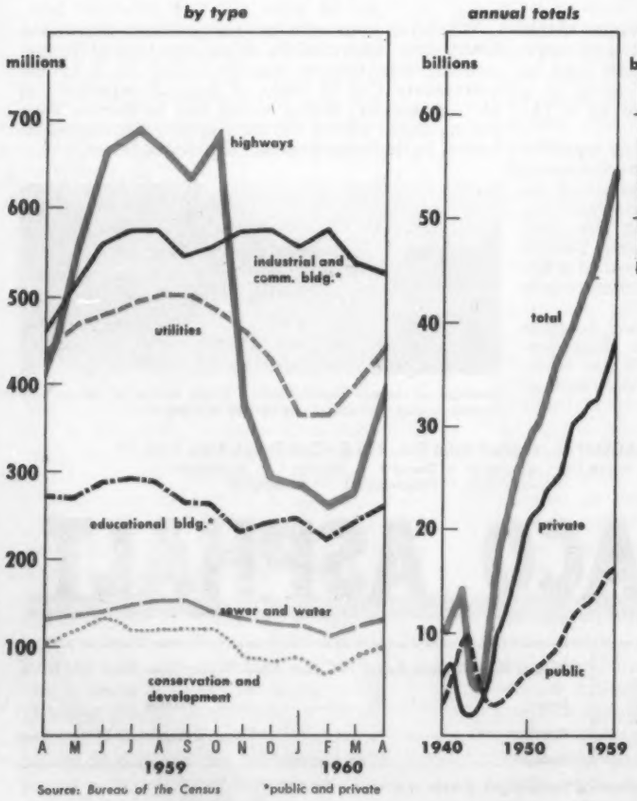
Construction-machinery manufacturers are pressing the Census Bureau hard for better machinery-shipment information—better and more detailed. Short of getting it from Census, manufacturers have suggested that the reporting of this item go back to the Business and Defense Services Administration.

Complaints are that Census doesn't know enough about machinery ship-

Industry Trends

DOLLAR VALUE OF NEW CONSTRUCTION

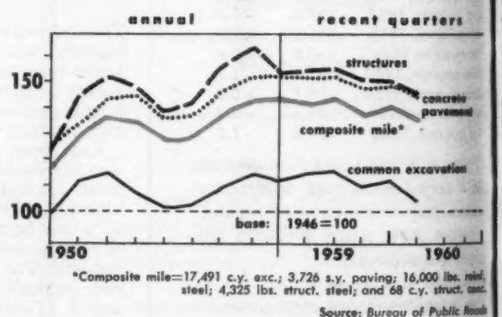
Recent Monthly Trends



Source: *Bureau of the Census* *public and private

AVERAGE BID PRICES

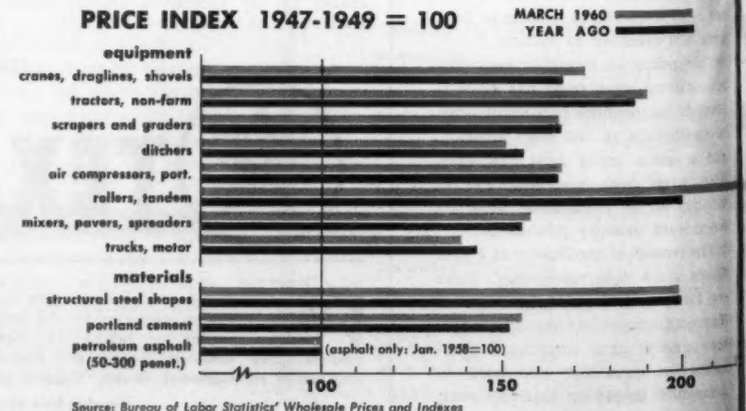
Federal Aid Highway Construction



*Composite mile=17,491 c.y. exc.; 3,726 s.y. paving; 16,000 lbs. reinf. steel; 4,325 lbs. struct. steel; and 68 c.y. struct. conc.

Source: *Bureau of Public Roads*

PRICE INDEX 1947-1949 = 100



Source: *Bureau of Labor Statistics' Wholesale Prices and Indexes*

...t information, or who uses it, to ...sent proper information. All roll-..., for instance, are reported in a ...mp, though there are enough types ...f rollers on the market to fill up a ...good many lines of a report, if prop-...erly reported.

Census, by the way, is under pres-...sure from other construction seg-...ments, too, since it rather unhappily ...took over construction reporting from the Bureau of Labor Statistics more than a year ago.

Bids low, competition growing for reclamation work

Although the Bureau of Reclama-...tion's contract-price trend line has been rising (by about 5 per cent an-...nually) for some time, contract bids have been surprisingly low over the past six months. According to Recla-...mation Commissioner Dominy, there has been more active competition in the past six months than has been



evident for eight years—and bids are coming in well below engineers' esti-...mates.

On reclamation work, by the way, look for an investigation into the policy of obligating power revenues for future irrigation work. It could affect construction on some of the vast western projects. At hearings on reclamation appropriations before a Senate committee, Louisiana's Allen Ellender said he thought "that once the power facilities were paid for, the revenues would go into the Treasury. I'm going to check into that—I don't see why such revenues shouldn't benefit all the people not just those who happen to be near the dam."

Commented Commissioner Dominy: "We'd be glad to welcome Louisiana into the reclamation area, if Congress approves."

A billion may be spent for public buildings

Prospects for new work for con-...tractors on public buildings within the next two years brightened con-...siderably, when the Senate Public Works Committee announced ap-...proval of nearly $1 billion worth of new buildings and alteration work throughout the country.

Committee approval is necessary before the General Services Adminis-...tration can seek appropriations for the structures. Don't get too excited right now—GSA figures better than two years between the time it gets appropriations and the time bids are called.

Of the total, 78 new buildings (post offices, courthouses and the like) will account for $879 million; alterations and repair work on 28 other struc-...tures will total $19 million.

Move to up consultant fees

The quiet campaign of the Bureau of Reclamation and other federal en-...gineering agencies to obtain a "raise" for consultants is apparently making some headway. The agencies want to raise the allowable fees from the present limit of $50 a day to $100 a day (plus $12 a day expenses), on the grounds that they can't obtain top-...flight help for the lower figure.

In early May a new bill (S.3488) went into the Senate hopper to okay the raise.

BuRec view on extra payments may affect labor agreements

As indicated in this column (C&E, November, 1959) the Bureau of Rec-...lamation has insisted on its view that extra payments to construction work-...ers at Glen Canyon Dam, Ariz., are "subsistence"—and BuRec will have no part of the cost of the 50-cent raise granted. That leaves Merritt-...Chapman & Scott holding a $5 million bag. This can have a serious ef-...fect on state-wide contractor-labor agreements in Arizona and other states. You'll recall that the Arizona agreement sets up twelve "zones," and provides "expense allowances" for work outside those zones. Glen Canyon wasn't included in the zones, and the implication is that any area so excluded calls for extra pay. But BuRec argued that the city of Page, Ariz., at the dam site—where it has built schools, houses, shopping cen-...ters, a sewerage system and paved streets—is no "subsistence" area; therefore, the Bureau isn't liable for 85 per cent of the extra pay.



NO. 12 MOVES FLEXIBLE BASE FAST —UP TO 3800 CU. YD./10 HR. DAY

The No. 12 pictured above is one of 4 Cat Motor Graders working on an Interstate Highway improvement contract being handled by T. L. James & Co., Inc. and R. W. McKinney of Corsicana, Texas. The 7-mile paving job is near Richmond, Texas, and calls for 62,178 cu. yd. of concrete plus 98,740 cu. yd. of gravel and 95,420 cu. yd. of flexible base.

To keep production high and on schedule, these contractors rely on the No. 12's superior performance and operating efficiency to move flexible base fast. Equipped with a 14-ft. blade, this unit spreads 3600 to 3800 cu. yd. per 10 hr. day.

This is the kind of production and dependability you can expect from the 115 HP Cat No. 12 . . . now, more than ever, with the many improvements incorporated in the *new* Series E model.

The most notable improvement is the new compact engine which provides greater lugging ability in tough going, long life and easier servicing. Horsepower remains the same (115) but this new engine develops higher torque and gives the No. 12 greater load-handling capacity. Besides a new compact engine, the No. 12 Motor Grader now has the dry-type air cleaner as standard. Removing 99.8% of all dirt from intake air this cleaner can be serviced in 5 minutes . . . cuts maintenance time by as much as 70% and substantially reduces cost . . . extends engine life.

Still retained are the many important features that have made the No. 12 the leader in its class. There's the oil clutch, providing up to 2000 hours without adjustment . . . the equivalent to 12 months of operation. Ample clearance between the top of the moldboard and the bottom of the circle drawbar provides greater rolling action . . . allows more material to move across the blade. Improved mechanical controls make engagement easier. Blade controls have a mechanical lock to insure positive blade position. When control is in neutral, the power shaft is locked by a set of gear teeth to prevent creeping.

These are just a few of the reasons why the NEW Cat No. 12E Motor Grader is out front. To get the complete picture, see your Caterpillar Dealer. He'll show you proof of top performance with an on-the-job demonstration!

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STEP UP PRODUCTION WITH THE IMPROVED NO. 12

For more facts, use Request Card at page 15 and circle No. 253

machinery

Special bucket cuts hand tamping costs



A special shop-built bucket is used by a Gradall to start trench excavation for a 24-inch cross drain from a ramp cut out by a dozer. The bucket shapes the trench to fit the pipe so that tamping around the lower part of the pipe is unnecessary. This saves the labor of two men.

Build the bucket to fit the pipe. That's the way Pete Minnaert found a way to beat hand-tamping costs on highway drain construction. For each size of pipe, he built a special bucket for his Gradall excavator.

The round-bottom bucket shapes the bottom of the trench to fit exactly the lower half of the pipe. The pipe fits the trench as snugly as a hot dog in a roll. There is no need to tamp the ground from the spring line down.

Minnaert, president of Minnaert Construction Co., Brooklyn, Iowa, put his invention to good use on a subcontract for the drainage work on a 7-mile stretch of Interstate 80 between Davenport and Iowa City. It



After 10 or 15 feet of trench is dug, the Gradall swings the 24-inch section into place. The flat end of the bucket is used to ram the tongue-and-groove joint together. Cost of this size bucket came to about $350.



Pete Minnaert, inventor of the bucket and head of Minnaert Construction Co., Brooklyn, Iowa, looks over the 24-inch bucket of ⅜-inch mild steel with a front lip of ¾-inch plate. It has a welded hardsurface cutting edge.

LUBE LOGIC Five tips to

How to return stored engines to service

In a previous issue of Lube Logic we gave you an 11-point program designed to protect gasoline and diesel engines during long idle periods. Now we'd like to finish what we started by describing the routine for taking engines *out* of storage and putting them back into action.

1 Where Texaco Rustproof Compound L has been applied to exterior of engine, remove with kerosine.

2 Remove waterproof paper and tape from all openings.

3 Remove spark plugs. Clean them and check the gap settings before replacing.

4 Remove distributor cap and clean Texaco Rustproof Compound L thoroughly from lobe of breaker cams. Replace cap.

5 Check the level of the crankcase oil. If it's at the full mark, there's no need to drain the oil before operating the engine unless it requires a different grade. If the oil has fallen below the full mark during storage, drain the engine and locate the oil leak, and repair it, then refill with the proper grade of oil, before operating the engine. The first oil change after the engine is back in service should be made in half the usual period.

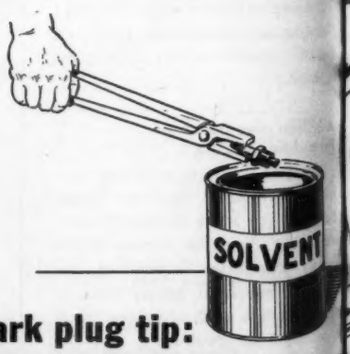
6 Check the cooling system for leaks, and add water or Texaco PT Anti-Freeze if necessary. It's not necessary to drain and flush if the cooling system was filled with a rust-inhibited anti-freeze before storage.

7 Fill the fuel system, start the engine, and let it run for a while. Check the oil pressure, and check for overheating and oil and fuel leaks.



End-of-shift is the best fueling time

They say there's a time and a place for everything, and for refueling equipment the best time is at the end of each day's work. And here are two reasons why. End-of-shift minimizes the possibility of fuel-tank rusting, because there's no room for condensate to form in a tank that's full of gasoline or diesel fuel. And tank-bottom sediment, stirred up by pumping in fuel, has a chance to settle down overnight, so it won't be drawn into the fuel line.



Spark plug tip: Degrease before you blas

Don't depend on your spark plug cleaner to do every thing. As a matter of fact, you can actually make thi worse by blasting an oil-fouled plug. Heavy oil depos on the plug will pick up the abrasive and hold it in t recesses between the shell and the insulator. Resu burning and ultimate failure because these deposits c seriously affect the spark plug's ability to dissipate h at high engine speeds.

Moral: degrease oil plugs in a suitable solvent and d them *before* you blast.

ed some 8,000 feet of pipe to lay. The concrete tongue-and- groove pipe varied from 60 to 18 inches in diameter. In general, the ground was suitable for this unique method of excavation; it was a glacial clay that held its shape well. There was very little ground water.

Cross drains

With the help of the special bucket, the job of installing the cross drains went fast. The first step was to set up an offset string line. Then the Gradall operator, guided by the string, started digging the trench. The grade at the bottom of the trench was checked by a man with a hand level sighting on the string line. The trench had to be cut "on the money," for the pipe could not be adjusted once it had been set in the trench. With an experienced operator, however, this was no problem.

The pipe was strung along the trench so that it could be placed by the Gradall as the digging proceeded. After a length of pipe was set, the flat end of the bucket rammed the tongue-and-groove joint together.

The top of the pipe was covered by hand shoveling and then tamped with pneumatic tampers. After the pipe was covered, the remainder of the trench was backfilled by a tractor-dozer and rolled with a sheepsfoot roller.

The most difficult part of the tamping—around the lower part of the pipe—was eliminated. According to Minnaert, the cut-to-fit method saved him the labor of two men. Now, the pipe-laying crew consists of only three men—the Gradall operator and two laborers.



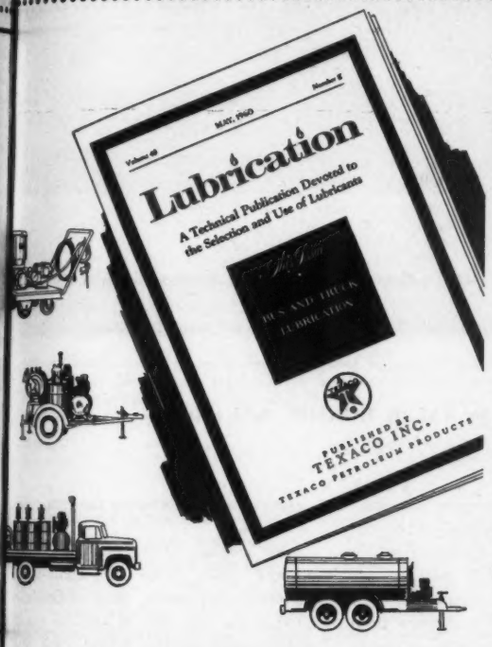
As the bucket excavates ahead of the pipe, a crewman with stick and hand level uses the offset string line, right, as a guide to check the trench grade. Various size buckets were used for the job, which requires pipe in diameters from 60 to 18 inches.

This same type of bucket was used on a storm-sewer project, requiring about 7,500 feet of different-size concrete pipe, under very wet conditions. The pipe was laid immediately after a short portion of ditch was dug. Hand labor was not needed in the bottom of the trench, and caving in and compaction were eliminated. This speeded the operation considerably and required less labor.

The buckets, which fit pipe sizes from 15 to 42 inches, are made of ⅜-inch mild, cold-rolled steel. The front lip of a bucket is made of ¾-inch steel, with a welded hardface cutting edge. The cost of making the buckets depends on the sizes. Minnaert estimates that it cost him about $350 to have the 24-inch bucket made.

THE END

prolong equipment service life



The whole truth about mobile LUBE RIGS

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- Special purpose lube rigs.
- Pros and cons of mobile and centralized lubrication.

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Lubrication is a major factor in cost control, and lube rigs can be a major factor in thorough maintenance, so send for your free copy of the March *Lubrication.* Supply of these valuable booklets is limited, so if you want one, send in your request *now* to Texaco Inc., 135 East 42nd Street, New York 17, N.Y., Dept. CO-10.



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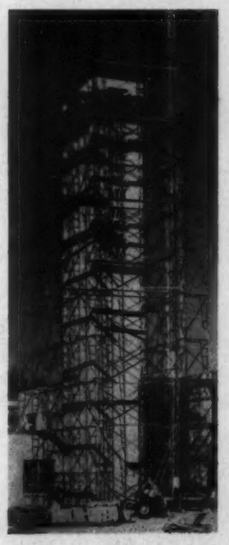
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Case history: A practical combination of scaffolding and hoisting equipment was effected in the construction of the Latter-Day Saints Church, Spring Valley, Calif. The contractors, Callahan Bros., placed a Tusky hoist on the job at its beginning and merely added additional tower sections as the structure went up. The Tusky hoist is hydraulically driven, eliminating clutch, down brake, and throttle lever, and its platform or concrete bucket will automatically stop at any preset level. It has a lifting capacity of 1,500 pounds, and the manufacturer states that, because the normal working parts are in oil at all times, the hoist requires a minimum of maintenance. For further information write to the **Tubular Structures Corp. of America, Dept. C&E, 2960 Marsh St., Los Angeles 39, Calif., or use the Request Card at page 18. Circle No. 94.**

Changes made at Trailmobile

■ J. A. O'Toole has been elected comptroller of Trailmobile, Inc., Cincinnati, Ohio, manufacturer of truck-trailers. George F. Adams was appointed assistant treasurer, and Lawrence P. Haverkamp has taken on the duties of manager of operations analysis in addition to his post as budget director.

O'Toole, who joined Trailmobile in 1945, is director of the National Association of Accountants. Adams has been with the firm since 1956.

Wheel Excavator loads 2,400 yards per hour



The Wheel—with six Esco 1¼-yard backhoe buckets to gouge out dirt and send it by conveyor to a self-propelled bin that loads Euclid bottom-dumps—excavates almost 50,000 yards of material daily for the embankment of Abiquiu Dam on the Rio Chama in New Mexico.

Conveyor system and automatic processing plants cut costs and speed construction of earth dam

by RALPH MONSON, field editor



The digging wheel itself, 21 feet in diameter measured from bucket tips, is mounted at the end of a boom of a modified Lima 1601 shovel. It runs at a speed of 10 rpm and is chain-driven. Buckets empty onto a 48-inch conveyor running along the boom and over the cab.

The Wheel—an intricate combination of buckets, conveyors, and horsepower mounted on a big power-shovel chassis—is excavating material for the embankment of Abiquiu Dam in New Mexico at a rate of more than 2,400 cubic yards per hour, or nearly 50,000 cubic yards per 20-hour day. This revolutionary construction machine, developed by F. K. "Bill" Mittry, Jr., promises to make most other excavating rigs obsolete for this type of work.

By average production figures, it would take nine 2½-cubic-yard shovels—equipment most commonly found on this type of job—to equal the output of The Wheel. One obvious advantage is its continuous operation; shovels, on the other hand, run into delays because of swinging the boom, positioning trucks, etc.



A pivoted 54-inch tail belt, extending 38 feet behind the rig, loads the self-propelled surge bin that fills a "Euc" in a few seconds. The Wheel makes a 120-degree swing as it chews into the bank, then steps forward another swing. The amount of forward movement determines the amount of material dug.



The operator has a clear view and remotely controls all operations from a cab on a tower. The Wheel is a brainchild of F. K. "Bill" Mittry, Jr., Mittry Construction Co., Los Angeles. Both The Wheel and the bin were built by The Conveyor Co., Los Angeles.



Bottom-dumps deliver loads to this dumping station, where material over 6 inches is separated and wasted; minus 6-inch is sent from Hewitt-Robins 6 x 12 vibrating-scalping screens onto the 48-inch transporting conveyor at left.



The material travels a continuous 8,600-foot belt, in its run from dumping to loading station. U. S. Rubber Co., Akron, installed the belt, which was delivered to the site in five rolls and spliced in the field. In the distance, The Wheel is at work.



Halfway in its run to the loading station, the conveyor crosses a deep canyon where a tributary stream joins the Rio Chama. The belt is carried on a bridge built across the canyon. In the distance is the dam site.

Mittry is one of the real mechanical geniuses of today's construction industry. He is probably best known for his development of The Mole, the earth-boring machine used so successfully on the tunnels at Oahe Dam in South Dakota. More recently, he pioneered the development of the big self-propelled sheepsfoot rollers.

Abiquiu Dam is a flood-control structure on the Rio Chama in north central New Mexico. It is being built by Mittry Construction Co., Los Angeles, for the Albuquerque District of the U. S. Army Corps of Engineers.

Built in a narrow canyon, the structure will rise 325 feet above the old river channel. While its finished crest length is only 1,450 feet, the embankment is 2,700 feet wide, measured along the channel at the base.

Most of the embankment comes from a large borrow area located approximately a mile upstream from the structure. Materials for the three zones of the dam—impervious, random, and pervious—are all being developed from the same source through a screening process.

Mittry designed a setup tailor-made for the job conditions. The Wheel loads the excavation into a fleet of Euclid bottom-dumps that haul across the borrow area to a dumping station. Here, the oversize is removed, and the material is loaded onto a 4,300-foot conveyor that terminates on a hillside bench beside the dam site.

At the conveyor terminal, a processing plant separates the materials for the several zones, adds water, and loads a second fleet of Euclid bottom-dumps that deliver the processed ma-



At the loading station, random material goes to the 317-yard bin, left. A screening plant over the center bin sends impervious material to the 150-ton center bin, pervious material to the 100-ton bin, right.



A "Euc" operator loads his bottom-dump merely by pulling a cord that starts the automatic mechanism measuring out the correct amount of material and water. A 16-yard load is picked up in just 8.5 seconds.



Most of the haul is downhill to the dam embankment; the loading station is some 1 feet above the foundation and 195 feet b low the crest, and most of the material going into the lower elevations. As "Eu make deliveries, tractor-dozers and rubb tire rollers take over.

a pair of stanchions on the forwar end of the bin. A high-speed 72-inc belt delivers the material from the bin to the Euclid bottom-dumps that pull up beside the bin to load. Both The Wheel and the bin were built by The Conveyor Co., Los Angeles.

Works like a dredge

In operation, The Wheel works something like a suction dredge. With its tracks paralleling the face on which it is working, the machine moves ahead any desired distance up

(Continued from preceding page)

terial to the embankment ready for spreading and compaction—all at rates of more than 2,000 cubic yards per hour.

The Wheel

Although there are many unique features in the setup, the most unusual is The Wheel. Although similar machines have been used abroad and in some mining applications, this is the first known adaptation of the digging wheel to this type of construction in this country. This particular machine, the first of its kind, was assembled right on the job site.

The business end of the unique excavator is a digging wheel mounting six Esco 1¼-yard backhoe buckets. The wheel measures 21 feet in diameter from tip to tip of the buckets. It is mounted at the end of the boom of a specially modified Lima 1601 power shovel and is chain-driven at a speed of 10 rpm by an adaptation of the shovel's crowd chain. A Cummins V12 engine powers the wheel and the machine's traction.

The buckets of the digging wheel dump the material onto a short shuttle belt that delivers it to a 48-inch transfer conveyor running back along the boom and over the cab to the rear of the shovel. Here the material falls onto a 54-inch pivoted tail belt that extends 38 feet behind the machine. All of the conveyors and the auxiliaries on the rig are electrically powered from a 150-kw GM diesel-generator set.

A special operator's cab is mounted on a tower, allowing the operator to observe the entire operation. All of the controls for the complete machine can be remotely operated from this cab.

Self-propelled surge bin

A separate self-propelled surge bin follows The Wheel and transfers the excavated material to the haul units. This 30-yard bin is mounted on four 24:00×25 rubber tires and is powered by its own GM 6-71 diesel engine. The operator, from his cab atop the bin, can steer the wheels as he moves forward or backward to maintain his position relative to The Wheel.

The pivoted tail conveyor of The Wheel is laterally confined between



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to a maximum of 30 inches to start a cut. The operator then starts the automatic swing control, and The Wheel slowly cuts its way through an arc of 120 degrees. Then, moving ahead another step, it swings back.

In each swing, the machine cuts approximately 65 feet into the bank. It usually works against a face 16 to 20 feet high. By selecting the amount of forward movement for each pass, the operator adjusts the amount of material dug by the buckets to match the capacity of the conveyors or the haul units.

Since the "Eucs" get their loads in just a few seconds and without any delay, a fleet of seven or eight can keep pace with the production of The Wheel.

The "Eucs" travel across the borrow area from The Wheel and mount a bridge over the dumping station. Stopping only momentarily on the bridge, the bottom-dump rigs drop their loads into a hopper. The hopper has hinged sloping sides that can be tilted up by air-powered cylinders to shake loose any accumulated soil.

Dumping station loads conveyor

Feeding out of the bottom of the hopper are two 60-inch × 25-foot apron feeders with variable-speed drives. These deliver the pit-run material to a pair of Hewitt-Robins 6×12-foot vibrating-scalping screens. Material larger than 6-inch is scalped off and wasted. The minus 6-inch drops through to a 72-inch transverse conveyor that delivers the material to a 60-inch accelerator conveyor. This runs to the long 48-inch transporting conveyor. The apron feeders can be operated independently at any desired speed to maintain a uniform load on the belt.

A Conveyco-Howe scale on the belt measures, totals, and records the weight of material carried by the belt. The scale is also connected to a safety device that stops the feeders if the belt is overloaded. The belt is designed to move 2,000 cubic yards of material per hour. Oversize wasted at the scalpers ranges from 3 to 20 per cent.

Conveyor crosses canyon

The 48-inch transporting conveyor runs 4,300 feet from the dumping station at the borrow pit to the loading station at the dam site. Its continuous belt, some 8,600 feet long, was supplied and installed by the U. S. Rubber Co., Akron, Ohio. The belt was delivered to the job site in five huge rolls, and the five splices were made in the field.

Near the mid-point of its alignment, the conveyor crosses a deep canyon where a tributary stream joins the Rio Chama. Cuts were made through the hills on either side, and a bridge was built to carry the belt across the canyon.

Power to drive the long belt at a speed of 800 fpm is supplied by two GM 6-71 quad engine sets, which have a total rated horsepower of 1,200. The two quads drive through a D. O. James reduction-gear drive to a single drive shaft that powers the head pulley.

The tensioning device that takes up the slack in the long belt is unusual. The tensioning pulley is mounted on a 4-wheel car that rides on an inclined track under the conveyor. A 1¼-inch cable, reeved through a series of blocks, connects the car with a 42,000-pound concrete block suspended inside a steel tower. The weight of the block maintains the tension on the belt; the block rides up or down in the tower to compensate for the lengthening or shortening of the belt.

Loading station adds water

The long conveyor delivers the material to a movable splitter at the top of the loading station. The splitter can be set to deliver the material either to the random bin of the station or to a screening unit. The screen separates the minus 3-inch material for the impervious zone from the 3 to 6-inch rock that goes into the pervious zones.

Since by far the greatest amount of material in the embankment is in the random zone, the 317-ton random bin alone is in use most of the time. The impervious bin holds 150 tons, and the pervious bin, 100 tons.

The random and impervious bins are fitted with automatic dump gates and water injectors. In the discharge chute below each bin are ten 4-inch pipes arranged in a grid. Each pipe has 28 half-inch holes in the top side. These pipes are connected through separate air-actuated valves to the water manifold.

Water spray

As the slide gate opens to drop material from the bin into the haul unit below, the gate trips successive relays that open the valves of the spray pipes and inject the sprays of water into the falling material. At the end of a predetermined time (generally 8.5 seconds), the gate automatically closes, shutting off the water valves as it slides back. In the same motion, it also actuates a counter that records the number of loads dumped.

The 8.5 seconds is just the amount of time required to fill one of the bottom-dump "Eucs" that haul the processed material to the dam embankment. All the "Euc" operator does is drive under the bin and pull a cord. The gate opens and closes, and the water turns on and off auto-





Early in the job, a Lima 1800 shovel excavated a cutoff trench for the dam. Here it is loading the material to a Euclid end-dump. This work, and the operation on the embankment, followed along conventional lines.



At this stage, the base for powerhouse and conveyor were being built. Two GM quads for driving the belt are in the foreground; pulleys and the drive mechanism are at rear. The concrete platform, right, is the base of the powerhouse.

(*Continued from preceding page*)

matically. In about 10 seconds, it drives out with a full 16-yard load of processed material.

Because of the automatic features of the dumping and loading stations the manpower requirements are very small. Two men operate the complete loading station, and three are required at the dumping station.

Water for the processing is pumped up from a well beside the river by a Byron-Jackson 75-hp 10-inch centrifugal booster pump to two 5,000-gallon storage and sedimentation tanks on the hillside above the plant. It flows back into the plant by gravity through a 16-inch steel pipe. The plant injects more than 300 gallons of water into the load of mix during the 8.5 seconds that the valves are open.

Although the entire conveyor system, including the dumping and loading stations, was built by The Conveyor Co., many of the details, such as the tilting hopper sides and the automatic gate timer and water system, were designed by Bill Mittry.

Building the embankment

The loading station is located on the hillside beside the embankment so that most of the haul is downhill. Actually, the loading station is about 140 feet above the dam foundation and some 195 feet below its crest. De-



"Bill" Mittry, designer of The Wheel, is project manager on the job. He also developed The Mole, an earth-boring machine for tunnel work, and worked on the development of big self-propelled sheepsfoot rollers.



Inspecting one of the partially-filled basins

The Great *Careymat* Lakes of Freedomland, U.S.A.

Thousands of visitors touring Freedomland, U.S A. will take a boat trip through a series of retaining basins covering more than ten acres and shaped like The Great Lakes and lined with Careymat.

More than 420,000 square feet of flexible, super-strong Careymat were installed by A. Belanger & Sons, Inc., of Boston to hold approximately 20,000,000 gallons of water for this scenic feature in the world's largest historical park, located in the Bronx.

Careymat is a proved, heavy-duty liner widely used for ponds, storage reservoirs, reclamation channels, and other liquid conservation and control purposes. For a detailed description of the material and the methods of application, write Dept. ENG-660 for a copy of Bull. 6341.



Aerial View Freedomland's Great Lakes, under construction. Freedomland, U.S.A. was created, designed and engineered by C. V. WOOD, Jr.



HIGHWAY & PIPELINE PRODUCTS DIVISION • THE PHILIP CAREY MFG. COMPANY • CINCINNATI 15, OHIO

For more facts, use Request Card at page 18 and circle No. 256



Two GM 6-71 quad engine sets provide the 1,000 horsepower necessary to drive the long conveyor. Eight engines drive a single shaft and also the head pulley.

Scholarships awarded by NSPE, Armco Foundation

■ Four-year civil engineering scholarships have been awarded to five high-school seniors in a nation-wide scholarship selection program sponsored by the Armco Foundation in cooperation with the National Society of Professional Engineers. Awards were based on scholastic records and aptitudes for engineering.

The 1960 winners are Leroy E. Baker of Omaha, Nebr.; Gary R. Bourne, Cashmere, Wash.; Thomas F. Francis, Poland, N. Y.; Peteris A. Porietis, Marion, Ohio; and Philip J. Stockhausen, Ormond Beach, Fla.

Each winner will receive $750 per year. The scholarship will be renewed annually for four years, providing the student meets the standards determined by the college in which he is enrolled. Winners may attend any college or university accredited by the Engineers' Council for Professional Development.

...of the slope of the embankment, the greater part of the material is contained in the lower elevations.

Embankment work

The operation on the embankment is quite conventional. The bottom-dump Euclids deliver the material, which is spread by a D8 dozer and compacted by a Ferguson 50-ton rubber-tire roller towed by a Caterpillar DW21 tractor. Since the embankment was overtopped during the flood stage, it was necessary to construct a channel to carry this water safely over and down the lower side into the stream bed below. The downstream end of the channel was riprapped with heavy rock.

Mittry started the job in March, 1959. The Wheel got into operation this March, although power shovels had moved a considerable amount of dirt before that time. Completion is scheduled for May, 1962.

Personnel

Bill Mittry spends most of his time on the job site, serving as project manager while he supervises the transformation of his ideas into realities. Joe Famularo serves as general superintendent on the job, with John Starkey and Jim Moberg assisting as project engineer and master mechanic, respectively.

Col. Albert L. Reed is district engineer for the Albuquerque District of the Corps of Engineers. Donald H. Wilson, resident engineer, heads the staff, which also includes field engineer A. R. Smeddon, office engineer John B. Rael, and geologist C. W. Matthews. THE END

Equipment list

Some of the equipment on the project, in addition to that mentioned in the article, includes:

6 Euclid S-17 scrapers
9 Cat D8 tractors (New A series)
1 Lima 1800 5-yard shovel (Serial No. 1 of 1800 series)
2 Lima 1601 4-yard shovels
1 Lima Model 64 1¼-yard backhoe
1 Lima 25-ton truck crane
2 GM diesel 235-kw generator sets (to supply all job electricity)
10-station intercom phone system
Motorola mobile radio system
28,000-gallon water tanks (pulled by Cat DW21's with hydraulic pumps run from tractor engine)
Over 60 end-dump Euclids
Over 20 Cat No. 12 motor graders
Standard of Texas fuel, lubricant

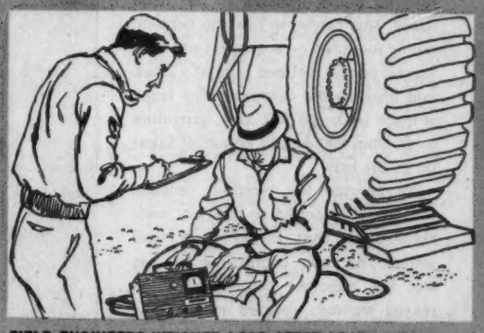
For more facts, use Request Card at page 18 and circle No. 257 ▶

Comparison study of Cat DW21G Tractor with SynchroTouch Transmission Control shows

DW21 SERIES G HAULING COSTS ...32% lower than Tractor X ...16% lower than DW21 Series C

Results on the job are the only true measure of a machine's ability to produce *profitably*. Competing on an actual job under identical conditions against Tractor X and a DW21 Series C, the new Caterpillar DW21 Series G-470B team hauled dirt at lowest cost per cu. yd. The combination of SynchroTouch Transmission Control on the tractor and LOWBOWL design of the scraper is unbeatable—note the results below. Your Caterpillar Dealer has a complete report on this job as well as other revealing time-and-cost studies. Ask him to show them to you. See for yourself how the DW21G-470B can step up your profits!

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

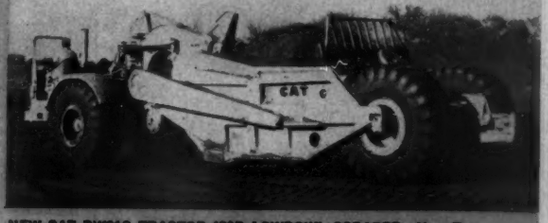


FIELD ENGINEERS WEIGHED LOAD AFTER LOAD as the competing units passed over the portable Streeter-Amet Electronic Scale. By subtracting average empty weight from average gross weight, they determined the average net load weight. This and other job studies prove that the new DW21G-470B hauls dirt at lowest cost per cu. yd., regardless of capacity of competing scrapers.

PROJECT: South End Shopping Center, Tukwila, Wash. **PURPOSE OF STUDY:** To compare production and cost per yard of equipment observed. **EQUIPMENT:** One DW21G with SynchroTouch Transmission Control; two Tractor X (24-yd. struck, plus 36-inch sideboards); and three DW21C (18 yd. struck). **JOB CONDITIONS: Material**—slightly damp clay with some sand. **Density**—3425 lb./bank cu. yd., average of three tests, oil method. **Haul length**—1300 ft. (one way), return same route. **Haul road conditions**—soft, not maintained during study. **Weight test**—loads weighed with Streeter-Amet Electronic Scales. **Pusher**—all units pushloaded by D9 with Torque Converter Drive.

JOB DATA:	Cat DW21G w/SynchroTouch	Cat DW21C	Tractor X
Average Load Time	.73	.75	1.20
Average Haul, Dump and Return Time	4.14	4.67	4.25
Average Wait Time	.44	.44	.44
Average Cycle Time	5.31	5.86	5.89
Average Payload in Bank Yards	20.0	17.5	23.9
Trips per Hour	11.3	10.0	10.0
Average Hourly Prod. (bank cu. yd.)	226	175	239
Owning and Operating Costs per Hour*	$20.37	$18.87	$31.84
Cost per Yard	9¢	10.8¢	13.3¢

*Hauling costs only—does not include pusher costs



NEW CAT DW21G TRACTOR-470B LOWBOWL SCRAPER. New Turbocharged 345 HP Cat Engine delivers 12% higher rimpull giving up to 20% faster travel speeds under similar haul conditions than the previous model. With SynchroTouch Transmission Control (optional), operator simply dials desired gear for automatic, split-second, touch-and-go response. New 470B LOWBOWL Scraper is rated at 19.5 cu. yd. struck; 27 cu. yd. heaped. LOWBOWL design loads more material faster because of less loading resistance. Result: DW21G-470B moves dirt at lowest cost per cu. yd.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

HAUL AT LOW COST PER CU. YD. WITH A DW21G-470B

Tricks of the Trade

F. K. "Bill" Mittry, Jr., project manager on Abiquiu Dam, comes up with unique rig modifications and designs

Belt tightener rides rail car beneath conveyor

Maintaining the tension on the 8,600-foot continuous conveyor belt at Abiquiu Dam requires an unusual take-up device because of the long



length of the belt and the high tension required.

Instead of the usual weighted take-up pulley hanging in the head tower, this conveyor has the take-up pulley mounted on a 4-wheel car that travels on the inclined rails of a track laid beneath the conveyor. The track is more than 100 feet long, providing more than 200 feet of potential take-up in the belt.

To provide the required tension, the car is attached to a heavy concrete block that hangs in a steel tower. The cable connecting the car and the concrete counterweight is reeved through sheaves so that the horizontal movement of the car produces only half as much vertical movement of the weight.

The heavy cable from the car runs between the rails to a snatch block at



the end of the track. Here it turns 90 degrees and runs out to the steel counterweight tower located some 50 feet away from the conveyor. The cable is reeved through a sheave at the bottom of the tower, up over a sheave at the top, down through a sheave attached to the concrete counterweight, back up to another sheave on the opposite side at the top of the tower, and back down to a final sheave at the bottom of the tower.

To apply the initial tension and raise the concrete counterweight part way up the tower, a heavy tractor pulled on the free end of the line. When the block had been raised to the desired height, the end of the cable was tied off at the final sheave. As the conveyor works, the huge counterweight rides up and down the steel tower in unison with the movement of the pulley car on the track and in response to the lengthening or shortening of the belt due to load, strain, temperature, and other factors.

The 48-inch conveyor extends from a dumping plant at the borrow pit to the processing plant at the dam site. The U. S. Rubber Co. supplied the belt for the job.

Air rams tilt hopper sides to free material

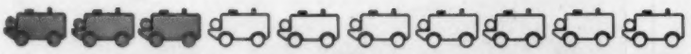
The accumulation of material sticking to the sloping sides of surge bins cuts down the capacity and reduces the efficiency of the units. Solutions to this common problem range from hand cleaning operations to elaborate mechanical and electric vibrating devices.

One unusual, but effective, method of moving the accumulation was de-



New Blue Brute drilling team—Worthington Blue Brute 900' rotary compressor with over/under design operates two Blue Brute crawler-mounted 4½" drills.

Why your next 900′ compressor w



Most manufacturers build their small rotary compressors with end-to-end design. Only 3 out of 10 produced use over/under construction (shown in blue)...



Yet in the 900' size, more over/under units are sold than any other. The story opposite tells why...

If you looked inside every rotary pressor on the market you would one major difference that separa men from the boys.

A few manufacturers build rotaries with over/under design the compressor's second stage is d underneath the first. This results improved rotary with many be The cylinders are self-draining stops clogging) and easy to get repairs. All principal parts can



vised by F. K. "Bill" Mittry, Jr., and installed on the dumping-station surge hopper at Abiquiu Dam near Espanola, N. Mex. The bin sides are hinged at the bottom. Long-stroke air rams, attached at the top, tilt the sides in from the sloping to a vertical position, and the accumulation slides down.

Bottom-dump "Eucs," delivering material from the borrow pits to the dumping station, drive over a bridge above the surge bin to dump their loads. An apron feeder below carries the material from the bin to a screening plant and then to the long belt conveyor that leads to the dam site.

When any of the material begins to build up on the hopper sides, the plant operator simply pushes a button that actuates the valves of the air cylinders and tilts the bin sides up to vertical. Another button returns the sides to normal position. This special hopper was fabricated by The Conveyor Co., Los Angeles.

Scale in feed conveyor weighs, totals, records material on moving belt

At Abiquiu Dam on the Rio Chama in north central New Mexico, a Howe-Conveyco scale is mounted in the feed conveyor between the dumping station and the 4,300-foot main conveyor that carries the fill material to the dam site. The scale gives the plant operator a continuous visual indication of the load going to the main belt. But it also serves several other functions.

A totaling attachment on the scale records the cumulative total weight of material carried by the belt. The totals on its direct-reading dial can be recorded at any desired intervals. A time-weight recording chart provides a pen-graph of the load fluctuations that indicates, on a 24-hour chart, the periods of shutdown, as well as the load on the belt at all times.



An overload device automatically shuts down the feed conveyor if its load exceeds the weight the long conveyor is designed to carry. This device is ordinarily set to load the conveyor up to a rate of 3,500 tons (approximately 2,000 cubic yards) per hour. If the load exceeds this amount, the device automatically stops the feed belt. The plant operator can then adjust the plant input feeders to cut down the flow before he starts the conveyor again.

The overload device is really just a safety feature to protect the system in case the operator is too busy to observe the overload on the scale dial. He usually keeps a close eye on the scale dial and makes adjustments in the feed rate to prevent the overload. The input to the plant is fed by two big apron feeders equipped with variable-speed drives. The operator can use either one or both of the feeders and can control the speeds to vary the output within very close limits.

While the scale is actually located down on the feed belt, a remote dial is mounted in the operator's station. The totaling and recording charts are also located in the operator's station. The accompanying picture shows the scale on the belt as seen from the operator's position.

Timing device adds water as it loads haul units with material for dam

An automatic timing device on the loading station at Abiquiu Dam measures out a full 16-yard "Euc" load of material, adds the required amount of water for compaction, and records the number of loads—all in a matter of seconds.

(Continued on page 19)



...most likely have OVER/UNDER design

...ved for inspection and replaced in ...urry.

...The superiority of over/under design ...indicated by the fact that in the ...est, most expensive size (the 900' ...) *more over/under rotaries are bought ...n any other kind.* Yes, it takes ...r/under design to handle heavy ..., such as operating *two* Worthing... 4½" Blue Brute drills which get ...ximum drilling footage with least ...consumption and less maintenance.

Worthington is one of the few manufacturers that offer over/under design in every compressor in its line. Worthington Blue Brute rotaries made with over/under design are built in 125', 210', 315', 365', 600' and 900' sizes. (A single-stage 85' rotary is also available.) There's a complete line of Blue Brute drills, too—right through the 4½" size. Ask your nearby Blue Brute distributor for a demonstration. You'll find him in the Yellow Pages under "compressors." Or write Worthington Corporation, Dept. 60-24, Holyoke, Mass. In Canada: Worthington (Canada). Ltd., Brantford, Ontario.

WORTHINGTON

For more facts, use Request Card at page 18 and circle No. 258

THERE'S A WORLD OF "CAN DO"



in the MASSEY-FERGUSON 1001 Tractor Shovel



NEW M-F FORK LIFT HAS INSTANT REVERSE

The 204 Fork Lift is another "MUST HAVE" in the Massey-Ferguson Industrial Line. The way the big 5,000-lb. capacity 204 "slides" into a load would warm any operator's heart. And it will go anywhere a tractor will go — smooth surfaces or rough — muddy areas. Instant Reverse gives the fastest smoothest operation you've ever seen! A wide range of attachments is available for marvelous versatility.

featuring INSTANT REVERSE

Here's a capsule description of the M-F 1001 — **powerful and rugged yet agile and fast.** Compare its price, performance, and quality-wise (and anywise for that matter) with the rest of the field! "HAVE DONE" performance has proven that the M-F 1001 —

CAN get you there and back while others are still on the way.

CAN out-perform larger, more expensive single-purpose machines on the big jobs.

CAN handle smaller, precision jobs with economy and dispatch.

CAN provide low-cost versatility because of numerous attachments.

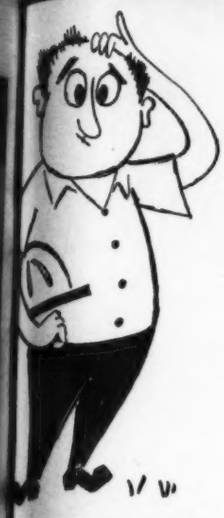
The M-F 1001 gets big, heaped loads because of low-pivoted bull dozer action, tremendous pryout capacity, and extremely effective rollback angle. And it gets them fast because of "touch-of-the-toe" INSTANT REVERSE. No other tractor shovel in its class can boast of such maneuverability.

Why Wait? — Set a Date — We'll Demonstrate!

MASSEY-FERGUSON INDUSTRIAL DIVISION
Block 1000 South West St., Wichita 13, Kansas
Producing Sizeable Power for the "Sensational 60's"

MF 60-26

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If you need help or are looking for new ideas or products to complete your jobs more efficiently and economically, you'll find a wealth of information in this issue of CONTRACTORS and ENGINEERS. Interesting and unique construction projects are reported in feature editorial right from the job.

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Each issue of CONTRACTORS and ENGINEERS carries more product advertising than any similar magazine. Naturally you will find here more of interest to you in your work. Key numbers appear at the bottom of almost every advertisement.

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Unique with the June number. Throughout this issue you will read unusual applications of products that may answer one of your problems. Reply card key numbers follow each story.

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When reading advertisements and new product and new literature items, remember the convenient postage paid return cards attached. Prompt handling of your inquiries is assured. Just circle the proper numbers, complete the card, and return it to us.

Look for these articles in July CONTRACTORS and ENGINEERS.

Site dewatered for sewage plant concrete pours

Double-jointing adds speed to pipeline project

New tricks with sheet piles on tough tri-level bridge

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Tricks of the Trade

(Continued from page 17)

Materials for the embankment of the earth-fill dam travel from the borrow area to the dam site on a 4,300-foot conveyor that terminates at the top of the loading station. As the material arrives, it may go directly to the first bin of the station for use in the random zones of the dam. Or it can be diverted through a screening plant that separates the



materials for the impervious and pervious zones and delivers them to the other two bins of the plant.

Euclid bottom-dump haul units carry the materials from the loading station to the dam embankment. The contractor, Mittry Construction Co., needing a simple, positive, and automatic device to load the "Eucs," devised the unique system, which is working very satisfactorily.

The bottoms of the random and impervious bins are fitted with sliding gates operated by air rams. The water required for compaction is added in a chamber immediately below the gates as the material is being discharged. Crossing this chamber, like a huge grate, are ten 4-inch pipes connected through independent air-operated valves to a water manifold. Each of these pipes has 28 half-inch holes in its upper quadrant to discharge the water. The water is supplied to the manifold under pressure through a 16-inch line from an elevated tank on the adjacent hillside.

The sliding gate is controlled by a timing device that leaves it open just long enough to discharge a full "Euc"



load. This is usually 8.5 seconds.

The "Euc" operator drives into position under the bin and pulls a cord that actuates the mechanism. As the gate slides open, it trips a series of relays, in sequence, that open the water valves. The water sprays upward into the material, which is discharging downward through the chamber. The resulting mixing action incorporates the moisture into the soil. At the conclusion of the preset time interval, the gate closes automatically, shutting off the water. As the gate closes, it actuates a counter that records the loading of another 16-yard load.

In the 8.5-second interval while the gate is open, more than 300 gallons of water is discharged and mixed with the 16 yards of dirt which loads a "Euc."

The plant is designed to load 2,000 cubic yards per hour, which means a 16-yard load every 28.8 seconds. Actually, the "Eucs" are easily loaded at 20-second intervals, including the time spent getting into position and pulling away.

The automatic gate system was devised by F. K. "Bill" Mittry, Jr., who is project manager of the job. The entire loading plant, as well as the conveyor system, was fabricated by The Conveyor Co., Los Angeles.

Clark Division names new plant manager

■ John J. Mlynski has been appointed plant manager of Clark Equipment Co.'s Central Parts Division in Chicago. He will have over-all supervision of operations at the division warehouse, which stocks and ships parts for Clark's material-handling, construction, and automotive equipment.

Mlynski was formerly general service manager for the Industrial Truck Division in Battle Creek, Mich. Prior to joining the company in 1953, he served for 7 years in the sales department of Ross Carrier Co., now a part of Clark Equipment Co.

Ramset names manager

■ Miles I. Bauman, formerly a sales representative for Ramset Fastening System, New Haven, Conn., has been made a district sales manager for the company. His territory will cover Indiana, Illinois, and western Kentucky. Ramset is part of the Winchester-Western Division, Olin Mathieson Chemical Corp.



Wide-Lites at work on the Wanapum Dam Project



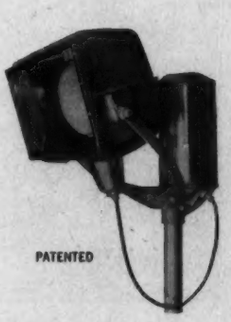
Notice how the broad beam pattern of the two Wide-Lites atop this concrete plant on the Wanapum Dam site flood the working area with shadow-free light. Good lighting like this speeds up work — cuts down accidents!

85 WIDE-LITES
speed night operations on Columbia River dam!

On as big a job as the Wanapum Dam Project on the Columbia River, you can't stop work when the sun goes down. But how do you give daylight working conditions on a 24-hour basis to the welders, bulldozers, crane operators and other workers building a sprawling power plant and spillway? Grant County Constructors, sponsored by Morrison-Knudsen Company, Inc., contractors on the Wanapum Dam, does it with 85 Wide-Lites.

Each Wide-Lite with color-corrected mercury vapor lamp will do the work of two or more incandescent floodlights, reducing the number of poles, cross-arms and fixtures required. And Wide-Lites are built for rugged construction use — with cast aluminum alloy bodies finished in epoxy paint for corrosion control. A tempered glass lens protects Wide-Lite's exclusive segmented polished aluminum reflector, and Wide-Lite's patented lamp mounting grips the lamp at both ends to virtually eliminate lamp breakage from shock.

Find out how Wide-Lites can solve your floodlighting problems — and save you money, too! Mail the coupon today.



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For more facts, use coupon or Request Card at page 18 and circle No. 260



The Delmag D-12 drove piles 35 feet through permafrost in 15 minutes.

Case history

Diesel pile hammer scores in Alaska

A Delmag Model D-12 diesel pile hammer was used for the Cushman Street Bridge at Fairbanks, Alaska.

One hundred and twenty 10-inch bearing piles were to be driven together with sheet piling for two cofferdams. The contractor, Chris Berg, Inc., reports that piling was driven in temperatures as low as 10 below zero, and that the hammer performed to the entire satisfaction of all concerned.

The light weight of Delmag diesel hammers permits the use of lighter and more mobile cranes. The unit is completely self-contained, eliminating the need for outside power sources.

For further information write to Special Construction Machines Ltd., Dept. C&E, 166 Bentworth Ave., Toronto 19, Ont., Canada, or use the Request Card at page 18. Circle No. 61.

Clipper names Lasche as Atlanta manager

■ Harry Lasche has been appointed manager of the Atlanta district of Clipper Mfg. Co., Kansas City, Mo., maker of concrete saws. The area includes North Carolina, South Carolina, Georgia, Alabama, Florida, and parts of Mississippi, Tennessee, and Arkansas.

Lasche joined Clipper in 1954 as

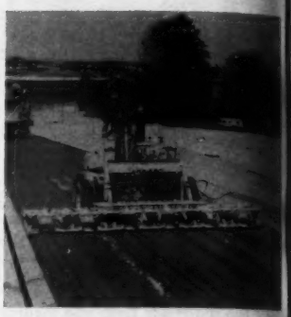
For more facts on Insert, use Request Card at page 18 and circle No. 262

branch manager working out of the Chicago district office. In the spring of 1957 he was promoted to product engineer, the post he has held until the present time.

Case history

Production is increased with vibratory compactor

The United Cartage Co., operating in British Columbia, was using up to 10 passes of light rubber-tire rollers to achieve the required density of 9-inch granular subbase. Fewer passes of heavier rollers were impractical



Operating in British Columbia, this Jackson multiple vibratory compactor reduced job costs by compacting a 9-inch subgrade to 95 per cent of maximum density in just two passes.

because of the fact that subgrades, frequently saturated by heavy rains, would not stand up under the heavier equipment. This slowed production and added greatly to the cost.

United solved the problem by substituting a Jackson multiple vibratory compactor for the light rollers. This machine, which has six electrically operated vibratory units in the workhead, each supplying 4,200 3-ton blows per minute, compacted the subgrade to 95 per cent of maximum density in just two passes.

For further information write to Jackson Vibrators, Inc., Dept. C&E, S. Jackson Road, Ludington, Mich., or use the Request Card at page 18. Circle No. 68.

Case history

Spreader-mounted screed saves $1,000 per month

A specially designed power-driven screed attachment, mounted at the rear of a concrete spreader, eliminated the Harrison Construction Co.'s need for one finisher on many paving projects and reduced labor and maintenance costs $1,000 per month.

According to the Pittsburgh firm, the attachment also eliminated separations in the finish, a major cause of time-consuming paving reruns.

To mount the 5M screed on the spreader, Blaw-Knox provided a rugged supporting frame. This is a welded double channel beam to support the driving and lift mechanism and designed to extend behind spreader end trucks. This design also



For a better profit picture...

CHECK EUCLID C-6 WORK-ABILITY



You'll find this new C-6 has the all-around tractor versatility needed for heavy construction, mine and quarry work. With five years of rugged field and proving ground test, this new crawler sets higher standards of performance on the toughest jobs for tractors in the 200 h.p. class.

Here are just a few advantages you get in the C-6 . . . a dependable GM 6-71 engine delivering 211 net h.p. to the power train . . . a proven Torqmatic Drive that provides full-power shift and cuts cycle time . . . fast-as-a-fox maneuverability . . . almost unbelieveable ease of handling . . . accessibility for servicing that pays off in more productive time on the job. It responds like nothing you've ever touched!

Have your Euclid dealer give you all the facts on the C-6 . . . he'll show you why this new "Euc" belongs in your spread . . . why it's your best equipment investment.

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FOR MOVING EARTH, ROCK, COAL AND ORE

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Top Performance . . .

Flight performance undreamed of a few short years ago is today's standard — with the Wright brothers, Lindbergh and other top performers of the past recalled only in story, legend and monument . . .
So it is in the construction industry, with today's mighty machines surpassing even the most fanciful dreams of pick and shovel days. Here, today's standards are being set by every day performances of TROJAN tractor shovels.

Top Performers in Aviation



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TROJAN®
TRACTOR SHOVELS
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TROJAN TRACTOR SHOVELS ARE AVAILABLE IN 8 MODELS, LIFTING CAPACITIES FROM 6,000 TO 24,000 LBS.

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Every Hour Saved means $100. to $1000. Earned in Concrete Placing Jobs!

and here are a few timesaver ideas!

Team up equipment to prevent delays which keep men idle—equipment costs are much less than lost man hours.

Use two or even three concrete buckets on a pouring job. While the crane spots one bucket and the concrete is being dumped, the other bucket can be filled, thus you can almost double output by eliminating waiting time between bucket loadings.

Accordion Hopper attachments on Gar-Bro Concrete Buckets guide concrete into narrow wall forms —prevent spillage and speed up the placing job.

When placing concrete in piers, use two or three collection hoppers with flexible steel drop chutes to direct concrete without segregation. Thus you can rotate the chute lines and shorten one line while the other is in use. This will eliminate delays of the bucket and crane and transit mix trucks.

Use Receiving Hoppers, either floor hoppers or portable hoppers for intermediary storage of concrete. Thus you keep a steady supply of concrete and prevent stoppage of the cart crew. At the same time you eliminate delays of transit mixers.

Supply your men with carts that are designed for handling concrete — Gar-Bro Concrete Carts — they are *balanced when fully loaded;* are easy to handle, easy to dump.

Concrete placing has become a science in the past ten years and, today, in the contracting business only careful planning and proper equipment can guarantee adequate profits.

See your Gar-Bro dealer for suggestions and methods of handling concrete or write for Gar-Bro's Concrete Handling Manual. **Gar-Bro Mfg. Co., Los Angeles, Calif. • Peoria, Ill.**
General Offices: 2415 E. Washington Blvd., Los Angeles 21, Calif.

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The World's Most Complete Line of
CONCRETE HANDLING EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 263

...itions rollers for maximum push ...tion on the screed.

The 5M screed attachment, con...lled by the spreader operator, is ...wered by the spreader's 6-cylinder ...soline engine, which is rated at 58 ...rsepower at 1,620 rpm.

For further information write to ...e Blaw-Knox Co., Dept. C&E, 300 ...rth Ave., Pittsburgh, Pa., or use ...e Request Card at page 18. Circle ...o. 55.

...se history

...re truck cleaning cost ...ith high-pressure unit

High-pressure cleaning equipment ...s cut the costs of cleaning ready-...ix trucks for Ray Sablain, Inc., of ...nsing, Mich.

After installing a new 600-psi John ...an Aquablast washer, the company



For the Ray Sablain firm, costs for cleanup of transit-mix trucks were cut substantially by Aquablast high-pressure cleaning equipment.

...eports a saving in cleaning time of ... hours per truck, per week. The firm ...eports that the savings in labor alone ...aid for the cleaning unit in just 7 ...eeks.

Further economies were effected by ...praying trucks with a mixture of ...0 per cent paraffin oil and No. 3 fuel ...il. This protective coating assured ...etter cleaning with the Aquablast, ...esulted in less wear, and reduced ...aintenance on moving parts.

For further information write to ...he John Bean Division, Food Ma...hinery & Chemical Corp., Dept. C&E, ...P. O. Box 840, Lansing 4, Mich., or ...se the Request Card at page 18. Circle No. 40.

...Civil engineer joins ...Sika department

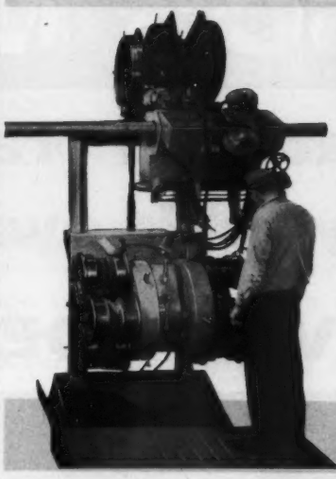
...Arthur K. Howe, a civil engineer ...with 39 years' experience in construc...on and maintenance, has joined the ...chnical service department of Sika ...Chemical Corp., Passaic, N. J. He ...ill assist architects, engineers, and ...ntractors with specific technical in...ries on concrete construction and ...intenance.

Howe has held positions with the ...nsylvania Railroad; the Long Is...d Railroad; the U. S. Air Force; ...Nassau Bridge Authority; the ...bore Service Corp. of New York ...; the Halloran Construction Co. ...Providence, R. I.; and the Valley ...eam Construction Co., Valley ...eam, N. Y.

For more facts, use Request Card at ▶ page 18 and circle No. 264



Designed for attachment to the Blaw-Knox concrete spreader, this 5M screed unit eliminated the Harrison Construction Co.'s need for one finisher on many paving projects, and reduced labor and maintenance costs $1,000 per month. The unit is shown in use on Interstate 1, near Conneaut, Ohio.



ROLLER AND IDLER REBUILDER
VICTOR MODEL "DEMS"

A big money-maker for anyone rebuilding tractor rollers and idlers on a production basis. Double-ended, multiple spindle mounts 8 track rollers, or 2 idlers, at a single loading. 360° rotation permits rebuilding all faces and flanges without additional handling. Automatic move-over assures uniform build-up. Dual wire feed cuts rebuilding time in half. Comes complete with power-saving power unit, specially engineered for automatic welding.



ROLLER FLANGE
FLAME HARDENER

prevents flange wear and roll over (cause of many premature failures) by flame hardening renewed area to approximately 50 Rockwell C. Dual torches flame harden both inside and outside of flanges simultaneously.

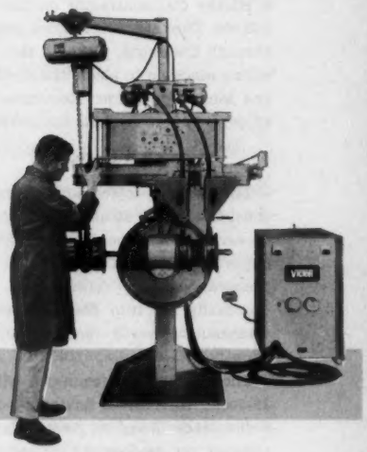
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Save yourself a barrel of MONEY with these VICTOR Rebuilding Machines

. . . manufactured by internationally known L&B Welding, Inc., now a wholly-owned subsidiary of Victor. Hundreds in use by world's leading tractor dealers. Let us show you how you can profitably renew track rollers, idlers, links, and crushing rollers with these proven machines. Help on shop layout, installation and training of your personnel available from factory experts. For complete story see your Victor dealer . . . or write us for descriptive literature.

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Economy Size
ROLLER AND IDLER REBUILDER
VICTOR MODEL B

Ideal for contractors and small repair shops. Produces same high quality work as larger Model DEMS, but mounts only two rollers or idlers at a loading. Has same type double wire feed, automatic move-over, and motorized positioning of work. Built-in jib crane (rated ¼-ton capacity) enables operator to handle rollers and large idlers with ease. Price includes power supply.



VICTOR FLUX GRINDER

processes 1500 pounds or more of fused flux per hour with very low flux loss. Sizes flux to factory specifications. Savings made by reclaiming only 12,000 pounds of flux returns low initial cost of grinder.

Mfrs. of high pressure and large volume gas regulators; welding & cutting equipment; hardfacing rods; blasting nozzles; cobalt & tungsten castings; straight-line and shape cutting machines; roller and idler rebuilding machines.

67-R



A Rex transverse finisher, equipped with a 35-foot, 3-inch screed having a 3-inch crown, shapes the 8½-inch deck of the Third Street viaduct in Columbus, Ohio. The rig rides on two rails supported on the outside girder flanges of the bridge.

Transverse finisher turns out bridge deck

Equipment works on steel rails supported by outside girders on 1,329-foot bridge

A transverse finishing machine generally used in highway paving operations turned in a smooth and efficient job during work on a concrete bridge deck in Columbus, Ohio. The Baker & Hickey Co., contractor on the $2,568,000 Third Street viaduct project through Columbus, picked a Rex finishing machine to shape the deck for the longest of three structures included in the contract.

Expressway link

The viaduct project, which actually consists of three structures separated by earth embankments, will form an important link in the Columbus Expressway system. This route will eventually tie into the Cincinnati-Conneaut Freeway being built in Ohio.

The Rex finisher, equipped with a 35-foot 3-inch screed having a 3-inch crown, rode along on steel rails positioned on 38-foot 9-inch centers. Each of the rails was supported over the outside girders or beams on the 1,329-foot, 11-span bridge structure.

The rail supports consisted of 2½-inch inside-diameter pipe posts, spaced on 4½-foot centers and threaded on both ends. First, the lower ends of the posts were screwed into threaded sockets welded to the top flange of the girder or beams. Screwed to the tops of the posts were threaded cylindrical caps to which 13½-foot-long 4-inch H-beam rail sections were bolted. The Rex ma-



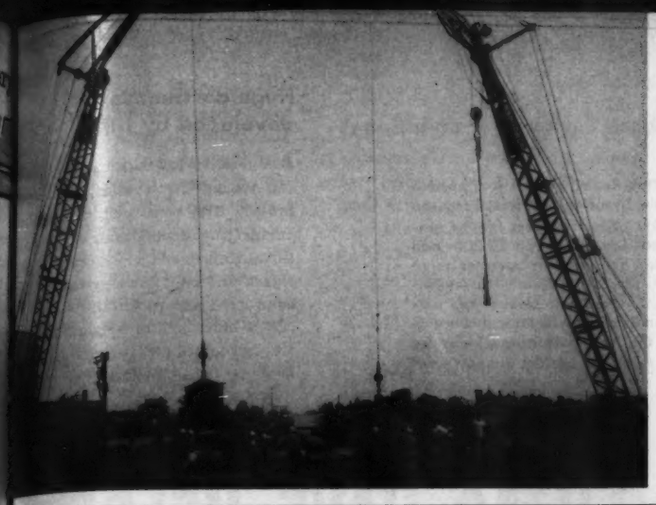
Supports for the rails used by the finisher are 2½-inch steel-pipe posts threaded at both ends. These are screwed into sockets welded to the top flange of a girder on 4½-foot centers. The 13½-foot 4-inch H-beam rails are bolted to caps screwed into the tops of the posts. Posts were unscrewed and the slab smoothed after paving was completed.

33-50% MORE

New Cat D9E Tractors will pay their own way with

ONE LEVER DOES IT ALL





A Manitowoc, right, and a Lima swing 1-yard buckets of concrete over the reinforcing, while crews with electric Maginniss and Thor vibrators follow to consolidate the mix.

chine was then positioned on the rails to spread the concrete mix for the 8½-inch deck slab.

Concrete was placed by two cranes —a Lima 44 and a Manitowoc—each using a pair of 1-yard concrete buckets. The cranes worked on the ground on opposite sides of the bridge. As they handled a bucket, another bucket was being filled by the transit-mix trucks.

This long structure spans the mainline tracks of the Pennsylvania Railroad, the Baltimore & Ohio, and the New York Central. For this reason, Baker & Hickey used 7½×2-foot steel-form panels, made by United Steel Fabricators, Wooster, Ohio, to clear the deck over the long girder spans. These panels were designed to be left in place, eliminating the need for removing them after bridge-deck concrete was placed.

The use of these panels made it possible to form the deck above, rather than below the bridge girders. Panels were bolted to the girders from above. After the concrete bridge deck was completed, it was topped with a 1½-inch asphaltic-concrete wearing surface.

John C. Hickey was the general superintendent for the contractor. Tom Yoho and Harmon Lindhorst were the bridge superintendents.

THE END

Case history

Material-handling unit valuable on muddy site

Mud didn't faze the Kwik-Mix Hi-Lifter handling material at the construction site of a 2-story brick office, warehouse, and distribution center for the General Foods Corp., at North Lake, Ill.

According to the V. S. Wallgren Co., subcontractor for the masonry work on the job, the Hi-Lifter took the place of 4 to 5 laborers, saving the company $100 a day, and eliminated double handling.

The 4-wheel-drive machine tended 16 masons over a 700-foot area, delivering brick and block from ground storage to scaffolds up to 19½ feet high. In addition, the Hi-Lifter unloaded incoming material from trucks and did miscellaneous jobs.

The unit can travel at speeds up to 18 mph, lift up to 6,000 pounds, and climb a 70 per cent grade fully loaded.

For further information write to the Kwik Mix Co., Dept. C&E, 235 W. Grand Ave., Port Washington, Wis., or use the Request Card at page 18. Circle No. 47.



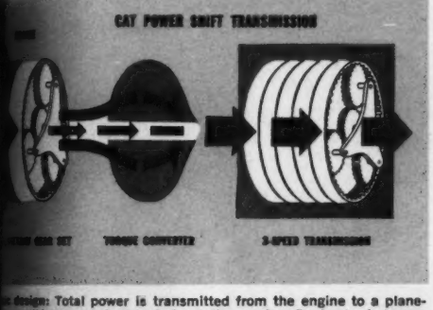
Tending 16 masons in a 700-foot area, the Hi-Lifter delivered brick and block from ground storage to scaffolds.

◀ For more facts, use Request Card at page 18 and circle No. 265

RPRODUCTION!

wi ull power shift transmissions
wi utstanding performance

- Shifts on-the-go under full load in a split second!
- Changes to all speed ranges, reverses direction!
- One control lever—and no braking or clutching!



design: Total power is transmitted from the engine to a plane- gear arrangement mounted on the engine flywheel. A torque directs the total power—part through a direct drive shaft to the transmission and the remainder through a torque con- to the transmission. This enables the Cat power shift trans- to combine the economy and quick response of direct drive the anti-stall and acceleration against load of torque converter Unit construction makes it easy to service, if required. It's —one rugged ton built with the precision of a fine watch.

Trading in another large track-type machine for a Caterpillar D9E Tractor has brought *big* production increases to two strip mine operators—increases that prove these power shift machines are quickly paying for themselves on the very tough jobs found in overburden removal.

"We're getting half again as much production with no additional cost," says F. M. Carmichael, part owner of Carmichael Coal Co. near Calumet, Ala. "Power shift cuts operator fatigue and increases the maneuverability of the tractor." That's exactly the reason for designing a Caterpillar transmission with a one-hand control which shifts into all speed ranges, forward or reverse and on-the-go, without braking, and without a master clutch.

Earl McCoy, owner of the McCoy Coal Company, Gorgas, Alabama, has had nearly as good results. "We're getting 33⅓% more production with the D9E over the machine we traded in... it's more economical to operate."

The D9E, like all Caterpillar track-type Tractors, has lifetime lubricated track rollers (with the exclusive patented floating ring seals) that never need servicing. Also a dollar-saving dry-type air cleaner that can be serviced in just five minutes, yet filters the air 99.8% clean *even in the worst dust conditions.* And shifting is so easy the operator just naturally gets more work out of the tractor. What's more, he gets it on the toughest, most demanding jobs.

Besides power shift transmission, you have your choice of direct drive or torque converter in both the 335 HP D9E and the 235 HP D8H Tractors. For complete details on the new power shift transmission, see your Caterpillar Dealer. He's ready to show how it works . . . demonstrate ruggedness under complete, easy one-hand control!

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.



more production! D9E, owned by Carmichael Coal Co. near Calu- Alabama, removes overburden of shale, sandstone and clay to 30" coal seam. Coal production is 9000 tons a month.



more production! Overburden, running to 60', is blasted and then by a D9E. Owner: McCoy Coal Company, Gorgas, Alabama. yards is moved to mine 150,000 tons of coal per year.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

STEP UP PRODUCTION AND PROFITS WITH POWER SHIFT TRANSMISSION



Case history: The Winn-Lee Masonry Corp., Dallas, Texas, reports it clipped a third from its cost for masonry construction labor by using a Massey-Ferguson fork-lift with mast extension. States the company: "Masonry labor for the new addition to the Eastman Kodak building out near Love Field ran $2,200—and without the fork-lift it would have run $3,500." The concern operates three fork-lifts at construction sites in the Dallas area, employs a fourth Massey-Ferguson fork-lift for material handling at the plant yard site in Dallas, and uses a fifth for a combination of yard material-handling and on-the-job work in Ames, Iowa. For further information write to the **Massey-Ferguson Industrial Division**, Dept. C&E, 1009 S. West St., Wichita, Kans., or use the Request Card at page 18. Circle No. 171.

Huge earthmover developed by I-H

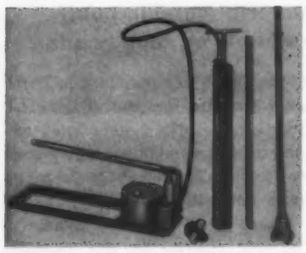
■ A giant 75-ton earthmover is slated for testing on a midwestern road project. The construction-equipment engineering department of International Harvester Co., Chicago, Ill., designed and built the new vehicle, still considered experimental.

The unit consists of two 2-wheel tractors joined back to back and powered by two 375-hp International diesel engines. The PD-105 Pusher Dozer, as it is called, operates either

Case history

Solve concrete removal in Boston tunnel job

The Duncan hydraulic Roc-Jak solved a difficult demolition problem for V. Barletta & Co., general con-



tractors for the tunneling job under Dewey Square in Boston, Mass.

The new tunnel was to go over an existing mainline transit tunnel and part of a station. The roof of the existing structure projected more than 4 feet above the base of the new roadway. The use of explosives was prohibited, and a headache ball was felt to be inadequate.

After cutting a key in the peak of the roof and line-drilling on 4-inch centers in such a way as to cut the slabs in 5-foot strips, the Roc-Jak was able to break out pieces 5 feet wide and up to 11 feet long. Several of the single pieces weighed as much as 15 tons.

For further information on the Roc-Jak, write to the K. O. Duncan Co., P. O. Box 504, Boulder, Colo., or use the Request Card at page 18. Circle No. 51.

Sales company formed

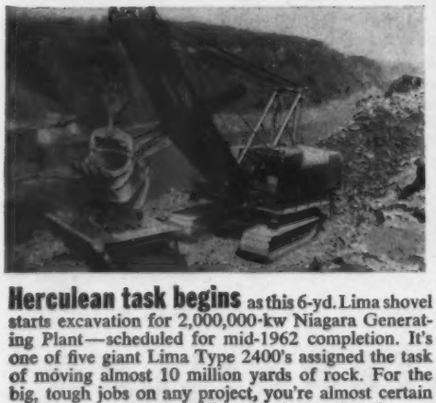
■ Ralph J. Chrobak has formed a new sales organization, The R. J. Chrobak Co. It will represent manufacturers in the six southern states of Alabama, Florida, Georgia, North and South Carolina, and Tennessee east of the Tennessee River.

Chrobak has been sales manager for the Buck Equipment Corp. for four years. Prior to that he operated a construction company.

Companies represented by the new organization include the Buck Equipment Corp., Cincinnati; Lull Engineering Co., St. Paul; and the Kelly Division of Wiesner-Rapp Co., Inc., Buffalo, N. Y.

HOW 23 LIMAS HAVE HELPED BUILD NIAGARA POWER PROJECT





Herculean task begins as this 6-yd. Lima shovel starts excavation for 2,000,000-kw Niagara Generating Plant—scheduled for mid-1962 completion. It's one of five giant Lima Type 2400's assigned the task of moving almost 10 million yards of rock. For the big, tough jobs on any project, you're almost certain to find Limas chosen to keep work on schedule.



Millions of yards moved and many months later, the Limas still at it—whittling down the 314-ft. cliff and forcing it back 300 from the Niagara River along a front of 1840 ft. Lima dependab and consistent high output can be directly traced to superior qua of design, workmanship and materials. All bearings above machine deck are anti-friction roller bearings; heat-treated alloy shafts splined; induction hardening of all wearing parts increases parts l steel bases are cast in one piece.

forward or backward. The front unit wields a 14¼-foot 8-ton dozer blade and there is a foot-thick pusher plate on the rear unit for pushing during scraping and loading operations. The PD-105 reportedly can push or pull about 90,000 pounds under favorable traction conditions. It is able to jackknife in the middle, where the two tractors are joined, and can turn inside a 24-foot radius. Top speed exceeds 21 mph.

The Pusher Dozer is expected to save money for contractors by speeding up earthmoving operations.

Case history

Foundation-type forms used for upper stories

Concrete forms originally developed for below-grade foundations also went skyward during the erection of the tallest building in Fort Lauderdale, Fla.

According to the contractor, the Collins Construction Co., Fort Lauderdale, the building—the $1,600,000 Birch Tower Apartments—rests on 465 Hercules piles, 65 to 95 feet deep to solid rock. Above grade, over 6,000 cubic yards of reinforced concrete had been used upon completion, and 8,875 contact feet of Simplex forms per floor. Exterior walls are 12 inches thick and 8 feet 5 inches high, while interior walls are 8 inches thick.

All concrete placed was raised by a P&H crane. Accuracy of placing at high levels was attained by radio communication between the operator and flagman.

The contractor, having observed Simplex forms in use, decided that they were particularly well suited for the forming of the reinforced concrete walls specified in the project. A major advantage, the company reports, was the light weight of the forms, which enabled workmen to



Simplex forms, although designed primarily for below-grade foundations, were used to form the concrete walls of this Fort Lauderdale apartment house, with excellent results reported.

hand them from a completed floor to the one above, thus expediting erection. Also, it was pointed out that this method eliminated the need for cranes or dollies, and prevented damage that might have occurred if a stack of forms had been bound together by chains or rope and then lifted upward.

Workmen found the forms easy to handle, and inner and outer forms were set up after reinforcing rods were placed in position. Using temporary scaffolding at each floor, only one man was required to set outer forms, while another workman set inner forms and inserted tie rods. In spite of bad weather and winds up to 45 mph, the schedule of one floor per week was attained.

Estimated man-hours per floor were: 180 for carpenters, and 270 for laborers.

For further information write to Simplex Forms System, Inc., Dept. C&E, 5605 Industrial Ave., Rockford, (Loves Park), Ill., or use the Request Card at page 18. Circle No. 172.

Photogrammetry awards made by Bausch & Lomb

Winners of the Bausch & Lomb Photogrammetric Awards were honored at the 26th annual meeting of the American Society of Photogrammetry.

Carl Shipek, Navy marine geologist doing graduate work at Scripps Institution of Oceanography, won first prize with a paper entitled "Surveying the Deep Sea Floor with Cameras." Jerry Masters, a senior at the University of Illinois, won second prize with "Photogrammetry and the American Cadastral Surveyor." The third prize winner, Charles Ballou, Jr., submitted a paper called "Raw Material Storage Volumes by Photogrammetry." He is a senior at the School of Civil Engineering, Cornell University.

Bausch & Lomb Optical Co., Rochester, N. Y., has made annual student awards in photogrammetry for several years.

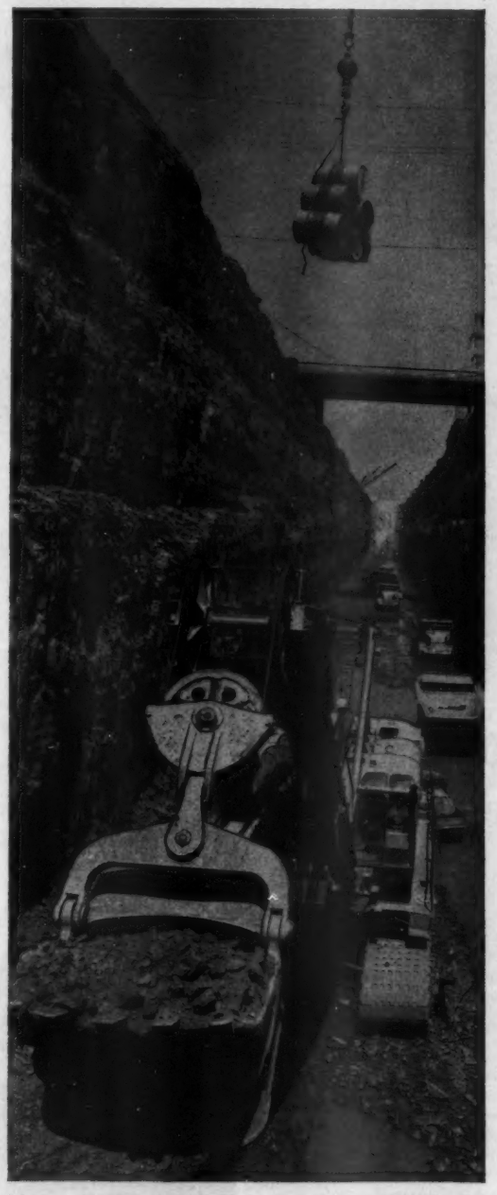
◀ For more facts, use Request Card at page 18 and circle No. 266



Lima dragline (top) begins excavation at intake site above falls. Water will be channeled from intake to reservoir and generating plant via 22,000-ft. underground conduit, 46 ft. wide, 66 ft. deep. Limas easily convert to shovels, cranes, draglines, pullshovels.



110-ton Lima crane (above) makes easy work of setting concrete form in place. Same rig later pours concrete. Booms of two Lima Type 1250-SC Cranes form archway over Niagara's "big ditch." Booms are of alloy steel with tube facing spliced to angles for greater strength.



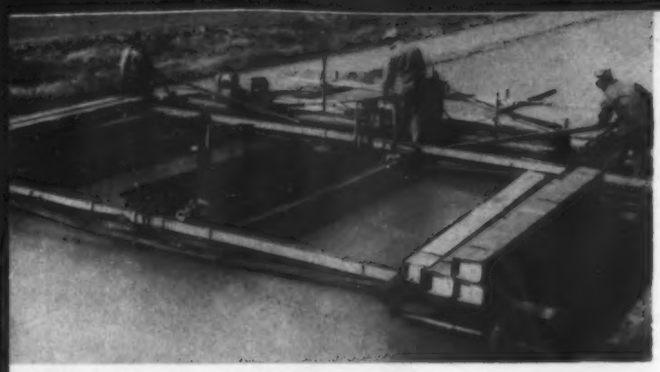
Limas demonstrate ability to outperform other equipment because they are better built; deliver years of trouble-free service. That's why four Niagara contractors are using a total of 23 Limas! Why not look into Limas for your jobs — crawler shovels to 8 yd.; cranes to 140 tons, 75 tons on rubber; draglines variable. See your nearby Lima distributor for facts, figures or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division, Lima, Ohio

BALDWIN · LIMA · HAMILTON 6036

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment



The Planter, a specially designed rig to place Unitube metal inserts to form longitudinal and transverse joints, is manned by a crew of three. Two are handling placement of an insert for a transverse joint. Longitudinal joints are placed from the bridge at the center of the rig.

The Planter and crimper

make it easy to install formed roadway joints

machinery



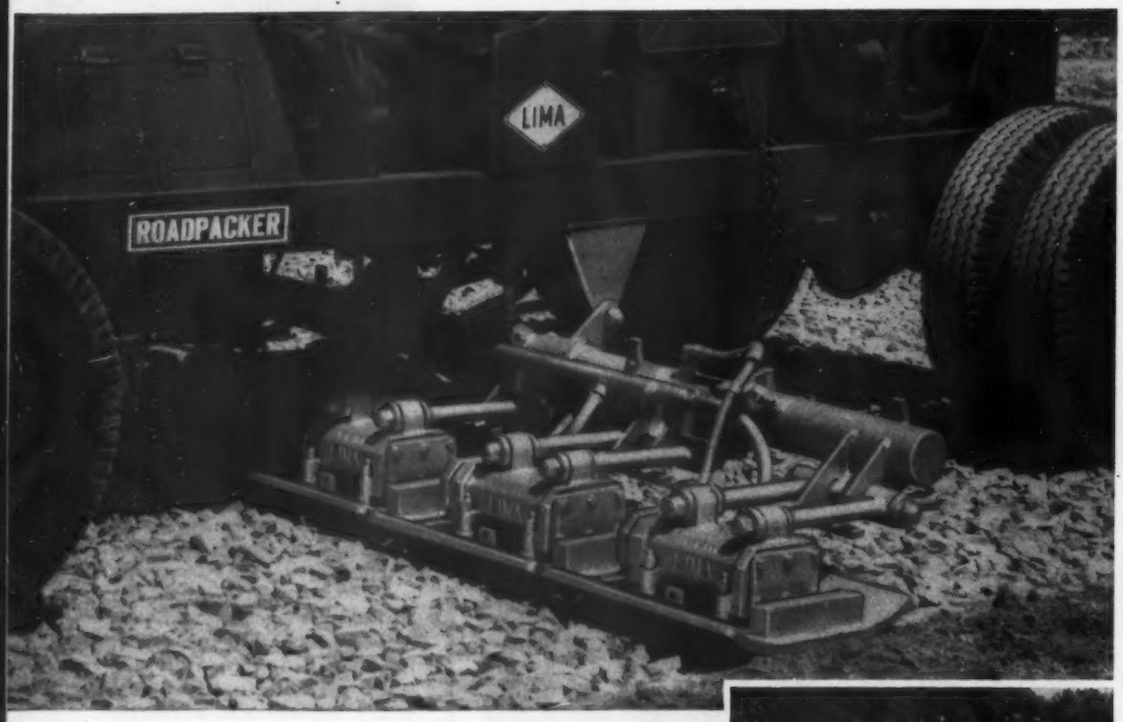
A specially designed rig dubbed The Planter, another rig used for crimping, and Unitube metal inserts brought construction costs down in forming the transverse and longitudinal joints on a 9.8-mile section of Interstate 26 near Columbia, S. C. Middlestadt Engineering Inc., Baltimore, Md., maker of the Unitube, also makes equipment needed for installation.

This $1.7 million paving project called for four lanes of divided highway with two 9-inch-thick 24-foot-wide slabs. Southern Roadbuilders Inc., Augusta, Ga., got the job, bidding on the basis of using the metal inserts to form joints. Its choice was influenced by the fact that formed joints would be more economical than sawed joints in concrete that had crushed granite as a coarse aggregate.

A 3-man crew rode The Planter, installing both the transverse and longitudinal joints. The rig rode the forms behind the paving train, providing guides for accurate placement of the inserts. A vibrating tee-bar device formed a groove in the fresh concrete and pushed Unitubes to proper depth to form transverse joints spaced at 25 feet. The ⅜-inch-wide flat top was left flush with the finished surface until after curing. The rig maintained a good pace, keeping close to the paving train that was led by two dual-drum Worthington pavers. A Blaw-Knox spreader, Blaw-Knox finisher, and a Koehring longitudinal float rounded out the spread.

While The Planter makes it easy to install the inserts, it is the Unitubes themselves that keep joint-forming costs low—and ultimately reduce the cost of maintenance. A hollow strip of lightweight galvanized steel, it is simply placed in the concrete. Ten-foot-lengths, which interlock end to end, are inserted from a bridge at the center of the machine to form the longitudinal joints. Transverse joints are formed by Unitubes placed to run from the side forms to the center line, where they butt against the longitudinal joint.

The ⅜-inch-wide inserts are 3¼ inches deep, and the sides taper together at the bottom so that the inserts can be easily set into the concrete. Flanges at the bottom turn





MODEL D ROADPACKER—International favorite for high-speed, high-production consolidation on highway and airport construction.



NEW 5-YD. LIMA LOADER digs, scoops, swings and loads from stationary position; no waste motion. Fast, economical way to handle bulk materials.

Vibrating shoes consolidate fast, deep for profitable single-course construction!

100% consolidation of subbase materials is often possible in only one pass with a Lima Roadpacker. High-speed vibrating action fills voids, keying materials to depths of 12 in. and more.

Fewer courses, passes

Single-course construction with a Roadpacker is more profitable, because you need lay fewer courses and make fewer passes than with less efficient consolidation equipment.

Working widths can be varied up to 13 ft., 1 in. End shoes fold up for highway travel at speeds to 30 mph. Roadpacker works at speeds from 20 to 95 fpm; consolidates up to 600 tons per hour. Works forward or in reverse, never shoves material. Self-propelled; gasoline or diesel engine. Easy to operate; good visibility. Optional widener attachment is available to replace trench rollers.

Lima Roadpackers are easy to maintain. Hydraulically operated vibratory shoe mechanisms are completely sealed from abrasive dust; maintenance free.

Super model available

Lima also offers a new 12-shoe *Super* Roadpacker for extra-high-production consolidation on large construction jobs such as superhighways, air bases and earth-fill dams. It has more than double the consolidating capacity of any multiple shoe vibratory machine!

Learn more about the profit-making features of Lima Roadpackers. See your nearby Lima distributor today or write to Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division, Lima, Ohio

BALDWIN · LIMA · HAMILTON 4024

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

For more facts, use Request Card at page 18 and circle No. 267



Project superintendent for Southern Roadbuilders, W. W. Lane, examines a section of Unitube. Sides taper so that the hollow strip is easily set in the concrete. After the concrete has cured, the flat top is crimped to provide a well for the joint sealer.

outward and upward to form a claw and embed each side of the flexible unit in a slab. The insert forms a plane of weakness in the concrete, effectively controlling the location of shrinkage cracks. As a crack opens, the unit is pulled apart at the base by the flanges embedded in the concrete. The insert also protects joint walls from curing compound and, in hot weather, prevents the sealer from migrating to the subgrade. This eliminates the need for much periodic resealing.

As the strips are vibrated into the fresh concrete, their tops remain flush with the slab surface, or slightly below. After the curing period, the one-man-operated mechanical vibrating crimping machine was run down each joint, folding the flat top of the Unitube inward and downward to produce a ½-inch-deep joint to carry the sealing compound. Sealing work was conventional, but less material was required to provide a watertight joint with the permanent Unitube in place. THE END

Ellicott acquires Brandt

■ Ellicott Machine Corp., Baltimore, Md., has acquired the plant of Charles T. Brandt, Inc., in the same city. It will operate as a wholly owned Ellicott subsidiary, under the name of Ellicott-Brandt, Inc. Allan W. Mund, president of Ellicott, has been elected president of Ellicott-Brandt, and Charles E. Brandt, son of the founder of the Brandt company, and chairman of its board, has been elected vice president of the new company and a director of Ellicott Machine Corp.

The Brandt company has been producing specialized metal work for private industry and the government, including a wide variety of pressed shapes, weldments, and stampings. It will continue these activities and other manufacturing suited to its facilities. A giant 30-foot press brake has been added to accommodate the market for single-piece formed shapes of extended length.

Michigan has more miles of toll-free expressway open to traffic on the National Interstate System than any other state in the northeastern section of the country.



Case history: Used to move an estimated 74,000 cubic yards of dirt on a road improvement project on the Black Canyon Freeway at Phoenix, Ariz., this Payloader H-90 loads out at the rate of one truck (14 cubic yards) every 1:50 minutes—a 100 per cent increase in production, according to the contractor, Ashton Co., Inc., of Tucson. The Hough machine was also used for such jobs as breaking concrete, tree stumping, and landscaping. For further information write to **The Frank G. Hough Co.**, Dept. C&E, 822 Seventh St., Libertyville, Ill., or use the Request Card at page 18. Circle No. 80.

MADSEN 50th ANNIVERSARY

50 years of engineering experience is "built-in" today's MADSEN Asphalt Plants. That's why you can depend on MADSEN for the most modern asphalt plants in the industry...such as the

MADSEN
MODEL 391
HOT-ROD
ASPHALT PLANT

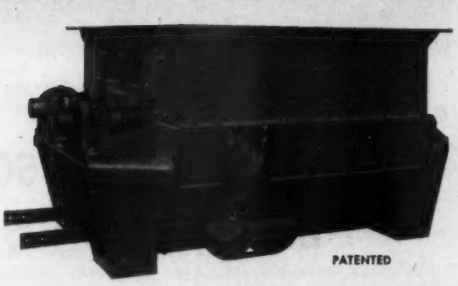


"WE GET A PERFECT MIX IN 29 SECONDS"

...says I. L. Croft & Son, Inc.
SAUGUS, CALIFORNIA

"We like a lot of things about our MADSEN HOT ROD Asphalt Plant"...says Mr. Croft, "and on a recent job on U.S. Highway 466 northwest of Mojave, California we learned about the money-making ability of this MADSEN 4000-lb. Plant. Mixing approximately 29,000 tons of Type B mix to strict California State Highway Department Specifications, we turned out 4000-lb. perfectly-mixed batches in 29 seconds. In one 8¾-hour day we mixed 1842 tons. We consider the MADSEN Twin-Shaft Pug Mill Mixer the fastest and most efficient mixer in the industry."

Designed to meet today's fast-moving industry, the MADSEN HOT ROD has no extras, no "trimmings"...just the essential components for fast output. Unit construction means easy set up and dismantling. Other MADSEN advantages include: fully enclosed (running in oil) gear box reduction unit, triple discharge bin gate openings (Pat. Pending), all air operation, and choice of automatic or semi-automatic operation.



PATENTED

Faster, more thorough mixing in the MADSEN Twin-Shaft Pug Mill Mixer is due to: (1) the general contour of the mixer, (2) the patented shank design, (3) pressure mixing through the arrangement of the paddles and, (4) the extra large discharge gate.

The MADSEN Asphalt Pressure Injection System with new rotating distribution bar (Patented) injects the asphalt into the mill quickly—cuts it off sharply to further improve mixing and reduce mixing time. Precision-ground liner segments may be quickly and easily removed and installed *externally* without field modification.

See your MADSEN Distributor for the complete story on the MADSEN Model 391 HOT ROD Asphalt Plant...ask for Bulletin No. 391.

MADSEN Equipment that Serves

MADSEN maintains a complete parts stock in Los Angeles and Lima, Ohio

MADSEN WORKS
Construction Equipment Division
BALDWIN-LIMA-HAMILTON CORPORATION
P.O. BOX 38, La Mirada, California

BALDWIN-LIMA-HAMILTON CORPORATION
P.O. Box L, Lima, Ohio

MADSEN PRODUCTS

ASPHALT PLANTS • PUG MILL MIXERS • AGGREGATE DRYERS • DUST COLLECTORS • ROAD PUG TRAVEL MIX PLANTS • WEIGH BATCHERS • DUST WASHERS • FEED BUNKERS FEED TUNNELS • ASPHALT TANKS • ASPHALT & FUEL PUMP UNITS • CONCRETE FLOAT FINISHERS FOR AIRPORTS AND HIGHWAYS • HIGHWAY-AIRPORT BASE STABILIZER PLANTS

For more facts, use Request Card at page 18 and circle No. 268

Equipped with the Powermatic 5000, the Chevy can haul a dozer-laden low-bed (gcw 56,800 pounds) at speeds up to 45 mph over tough mountain roads.



Case history

Powerful transmission cuts truck repair bills

An Allison-built Powermatic transmission in a Chevrolet at work high up in the mountains of West Virginia has been proving the hard way, the last 18 months, that it can take every abuse and come back for more.

Richard B. Stout, president of the Stout Construction Co., Hurricane, W. Va., reports that his pipe-laying firm saves nearly $5 every day it operates the Chevrolet Powermatic 5000. In its off-highway work, the rig hauls 26,000-pound loads of pipe up steep mountain slopes over virgin terrain.

In one year, the Powermatic-equipped tractor saved approximately $1,300 in repairs over the maintenance bill of the tractor previously used.

For further information write to the Allison Division, General Motors Corp., Dept. C&E, P. O. Box 894, Indianapolis 6, Ind., or use the Request Card that is bound in at page 18. Circle No. 52.



California paving contractor says:

Liked A-W roller so well, bought two more!

"Our first A-W performed so well that we bought two more over a period of 5 years. We use them to roll both subgrade and finish courses. They are fast and efficient machines; and can deliver the 95% relative compaction required. Torque converter allows more positive control of rollers for uniform compaction. Hydraulic controls make them easy to operate. Plenty of visibility for operators to do precision jobs. The A-W rollers are well-built; maintenance has been no problem."—*Pat Regan, Exec. Vice Pres., A. J. Raisch Paving Co., San Jose, Calif.*

A-W 3-wheel rollers available in 8 to 11, 10 to 12, 12 to 14-ton models; tandems 5 to 8, 8 to 12, 10 to 14 tons. Portable tandem variable between 3½ to 6 tons. Vibratory Roller Compactor and Widener Attachment also available. Choice of gasoline or diesel power; torque converter with 4-speed transmission optional.

Austin-Western offers you a number of important dollar-saving features not available on many other makes of rollers. Let us prove to you the ways in which A-W rollers can increase your compaction efficiency and decrease maintenance and operating costs. Contact your nearby Austin-Western distributor or write directly to us.

Austin-Western

CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

For more facts, use Request Card at page 18 and circle No. 269

Case history

Shovel skims blacktop without prior ripping

The job called for removing existing blacktop (2 inches thick and up) on a 4-mile stretch of Sheridan Boulevard in Denver, Colo., subgrading to a depth of 27 inches, and widening to four lanes—while maintaining 2-way traffic.

The powerful crowd and break-out force of the Western Paving Construction Co.'s Koehring 205 Skooper enabled it to rip up the old blacktop without any prior breaking or ripping. Stand-still loading of the Skooper with its 360-degree swing and 7-foot level crowd did not dig up the subgrade, thus eliminating the need for the motor grader that had been required when a front-end loader was doing the work.

Western Paving reportedly found that its Skooper could load trucks efficiently even at 180 degrees, and that the machine's low clearance kept it free from overhead utility wires.

For further information write to the Koehring Division, Koehring Co., Dept. C&E, 3026 W. Concordia Ave., Milwaukee 16, Wis., or use the Request Card at page 18. Circle No. 82.

Ingersoll-Rand appoints

■ Joseph A. Wiendl has been given the post of general manager of sales for Ingersoll-Rand Co., New York, N. Y. He has been assistant general manager of sales since February, 1959, and prior to that was manager of the company's rock-drill department.

Chrysler names manager

■ Robert M. Purdy has been appointed sales manager of Chrysler Marine and Industrial Engine Division, Detroit, Mich. He has an extensive background in the field. With Borg-Warner Corp., he served as a service manager and assistant sales manager, trained personnel in England in service and sales techniques, and coordinated plant organization on the Continent.

Prior to this, Purdy was with the Kent-Moore organization as service manager, and supervised customer contact with Detroit Transmission Division of General Motors Corp.

this LIGHT STAYS LIT!

Super Rough Service

STURDILITE

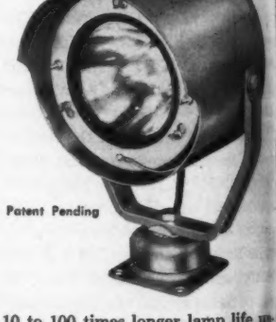
Typical field report:

Heckett Engineering Co., Butler, Pa., *says*: . . .

"We used to replace at least one bulb each night in the floodlights of our magnet crane.

Our crane picks up and drops a 20-ton ball. The shudder and quake is death on conventional floodlights.

Seven weeks ago we installed STURDILITES, and the original bulbs are still burning!"



Patent Pending

10 to 100 times longer lamp life under heavy vibration . . . that's the actual record of new STURDILITE flood lights, in the field. Remarkable bulb savings and improved lighting are being demonstrated in a wide range of rough service installations. STURDILITE is the *only* floodlight with syncho-harmonic design for positive shock suppression. Available in 6 to 120 volts in models for all requirements in heavy construction, mining, quarrying, industry, transport, etc. Write for literature

PHOENIX PRODUCTS CO.

4727 N. 27th St., Milwaukee 9, Wis.

For more facts, circle No. 270



Case history: Building the north approach to the Lake Union Canal bridge, part of the Tacoma-Seattle-Everett Freeway, MacRae Bros. Construction Co., of Seattle, had to demolish and remove a number of homes in the path of the new highway. Utilizing a crawler tractor equipped with a Carco winch, a job that normally took an hour and a half was accomplished in just 22 minutes. First, a cable was strung through and around the house; then the winch's pull was exerted, and down came the house. Next, the tractor-dozer blade came into use, breaking the house into small pieces that were easily removed. With this tractor-winch combination, the contractor reports a definite saving in time and money. For further information write to the **Pacific Car & Foundry Co.**, Dept. C&E, Renton, Wash., or use the Request Card at page 18. Circle No. 105.



HERE'S HOW YOU CAN GET MORE DITCH PER DOLLAR!



Photos above show the versatile Vermeer 4T POW-R-DITCHER digging a gas main trench. Manufactured for the light construction field, this small, inexpensive ditcher is excellent for water and cable lines and home foundation footings.

RUGGED, LOW COST 4T

POW-R-DITCHER

DIGS 6"-14" WIDE
DOWN TO 4½' DEEP

The small powerful, ruggedly built Vermeer 4T POW-R-DITCHER is designed especially for contractors, municipalities, utilities, institutions and custom operators. Only 46" wide, the 4T is fast . . . and highly maneuverable. One-man operated, the POW-R-DITCHER is self-propelled, has two-way dirt conveyor and hydraulic track drive. Handles most ditching jobs at a fraction of the cost of more expensive ditching machinery.

IDEAL FOR LAYING GAS PIPE, WATER AND CABLE LINES AND FOR HOME FOUNDATION FOOTINGS

The 4T POW-R-DITCHER is the finest buy on the market when you want a low cost investment, low maintenance cost and high production. Capable of handling most ditching jobs, the 4T is a real workhorse!

Please send me FREE information and prices on the complete line of self-propelled Vermeer POW-R-DITCHERS.

NAME _____

TITLE OR DEPT. _____

FIRM _____

ADDRESS _____

CITY _____ STATE _____

VERMEER MFG. CO.
1437 W. WASHINGTON, PELLA, IOWA

For more facts, use coupon or circle No. 271

Case history

Tractor ups profits on backfilling job

Putting an Oliver Trans-O-Matic OC-96 to work on a backfilling job on the Long Island Expressway released four men to work on other jobs, reports the Slattery Contracting Co., Maspeth, N. Y. The firm says the machine did the job in half the time hand labor would have required, resulting in a considerable saving.

The fill for the pit formed by a bridge abutment and a retaining wall was stockpiled 20 feet high and 120 feet long. The OC-96 loader cut away the pile and hauled the fill to sections of the excavation where it was needed.

Because of the size and location of the pit (120 feet long, 20 feet deep, and 9 feet wide; confined by walls, the abutment, and structural steel) the four men had formerly spent two weeks on a similar operation, spreading the fill by hand until the floor was raised to a level to allow the use of a large dozer. The Trans-O-Matic OC-96, with its counter-rotation turns permitting the machine to turn in its own length, filled this compact area in three days.

For further information write to The Oliver Corp., Dept. C&E, 400 W. Madison Ave., Chicago 6, Ill., or use the Request Card at page 18. Circle No. 104.

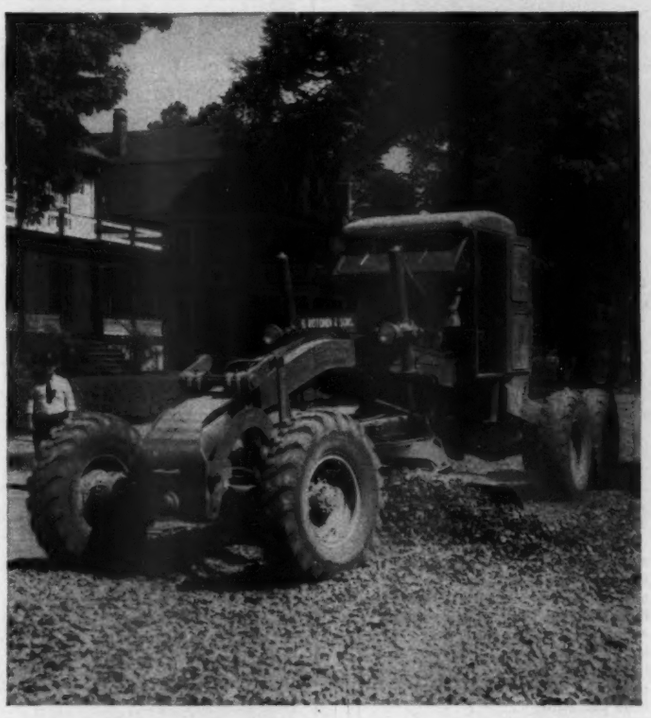
Case history

Electric generating plant saves $2,500 annually

The Aljohn-Kiewit Construction Co. estimates it is saving about $2,500 annually, in fuel costs alone, through the installation of an Onan 6,000-watt diesel-driven electric generating plant on a tug working on the St. Lawrence Seaway.

Installed to provide power for lighting night operations, the Onan Model 6DRN also runs the fuel transfer pumps and provides warm air to defrost windshields.

For further information write to D. W. Onan & Sons, Inc., Dept. C&E, 2515 University Ave. S. E., Minneapolis 14, Minn., or use the Request Card at page 18. Circle No. 41.



Austin-Western—the economical, all-purpose grader for contractors

"With our Austin-Western Super 200, we can lay stone or blade a finish grade equally well. Because it does do so many types of work, it's a real time and money saver. For instance, on a recent highway job, the A-W laid such a fine finish on a cloverleaf slope that we didn't have to touch a shovel to it; not a bit of hand labor necessary!

"I wish all equipment was as economical and easy to maintain and operate as the A-W. You can bet that when we're ready for another grader we'll consider buying another Austin-Western!"—*Joe Rotondi, G. Rotondi & Sons Contractors, Melrose, Mass.*

Exclusive all-wheel drive and all-wheel steer, in combination with precision hydraulic controls, make A-W graders such useful, all-around machines for contractors. Learn for yourself; ask any A-W owner.

Available in 6-wheel Super and 4-wheel Pacer models; wide range of weight classes and horsepower ratings. Get all the facts; see a demonstration. Contact your nearest distributor or write us direct.



EXTREME BLADE REACH is one of many operational advantages. Rear steers and blade reaches for perfect finish without tire marks.

Austin-Western
CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.
BALDWIN · LIMA · HAMILTON
Power graders • Motor sweepers • Road rollers • Hydraulic cranes

For more facts, use Request Card at page 18 and circle No. 272

Fast setup time for pile driving

Production-line methods for bridge construction have pipe and H-piles handled by diesel rig

machinery



Well organized and equipped construction squads developed production-line techniques in building a series of bridges on Interstate 90 near Buffalo, Wyo. Each squad built a certain increment of each bridge and then moved on to do the same operation on the next structure. Pile-driving work was done with a highly portable driver that was easy to set up.

The contractor, Husman Bros., Inc., Sheridan, Wyo., had two contracts with the Wyoming State Highway Department for 12 bridges on two adjacent sections of the completely new alignment of Interstate 90 between Gillette and Buffalo. Husman also had a contract for structures on another section of the interstate highway just north of Sheridan.

By breaking the crews down into small squads, each with a particular specialty, the contractor was able to keep each crew at optimum manpower and to supply each with the proper equipment. The arrangement assured maximum utilization of the equipment. One squad drove piles; another built pier columns and caps; others formed, poured, and stripped the decks.

Use diesel pile driver

Most of the structures were founded on steel-pipe piles filled with concrete. One railroad overpass on the



A Delmag 12 diesel hammer drives H-piles for one of 12 bridges built on adjacent sections of Interstate 90 near Buffalo, Wyo. The highly portable rig, weighing 6,802 pounds, was brought to the various sites in its own cart. It has a 2,750-pound piston and delivers a total of 22,600 foot-pounds of energy per blow.



Setting-up time is short. The hammer is first picked off its cart and stood upright on the ground at the base of the leads. After the hammer is attached with clips to the rails of the leads and the fuel tank filled, it is ready for work.



With the planet-powered 230-hp TD-25 pushing—and with 375 high-torque International Diesel hp under the "295's" hood—you heap on 34-cu. yd. with amazing new speed. Even in toughest loading conditions, "X"-member reinforcing maintains perfect Payscraper push-frame alignment!

Note that the Payscraper apron lifts to a big 94-inch ope... Two ejector-plate pushing members apply dozer-like action to ... out the whole 34-cu. yd. load cleanly. The 122-inch bowl ... speeds unloading, and loading, too—adds control ease and sta... loaded or empty.



Sheridan job had steel H-piles, and some of the other structures had spread reinforced-concrete footings with concrete pier columns.

To drive the pipe and H-piles, Husman used a Delmag 12 diesel hammer. The Delmag driver is carried on a small steel-wheel cart that cradles and protects it in transit. A truck or tractor can tow the cart right to the driving site. The driver has a gross weight of 6,802 pounds, of which 2,750 pounds is the weight of the piston. It has an energy rating of 22,600 foot-pounds per blow and strikes 42 to 60 blows per minute.

A Northwest Model 25 crawler crane with 50 feet of boom handled the 60-foot leads on this job. Later in the season, the contractor substituted a new Northwest Model 41 with 70 feet of boom and a set of 80-foot leads.

Preparatory to driving, the crane picked the hammer from its cart and stood it on the ground at the base of the leads. Four clips attached the hammer to the rails of the leads in a few minutes. The crew filled the 4-gallon diesel fuel tank, and the driver was ready to go to work. The crane raised the hammer to the top of the leads; a pile was threaded into place; the crane raised the piston of the driver and released it, and the driving operation was in progress.



Some of the bridges have spread footings with concrete columns supporting caps and deck. Concrete is delivered to the steel forms in a ½-yard bucket. The Challenge 3½-yard mixer on a Chevrolet truck supplies the ready-mix.

As the piston came down, a charge of diesel fuel was injected into the cylinder. This fired at the bottom of the stroke, increasing the impact, as well as raising the piston for the next stroke. To stop the driver, it was necessary only to pull a cord that disengaged the injector and stopped the operation immediately.

Concrete columns

Where spread footings and concrete columns were required for a bridge, they were formed by the same crew that built cap forms for the pile-supported structures. The 30-inch round columns were formed with patented steel forms supplied by Western Spanall.

Caps for these bents were supported on pairs of 12-inch channels anchored to the concrete columns with 1¼-inch Superior coil ties. Caps for the pipe-column bents were shored from the ground. All cap forms were built of lumber and plywood with Masonite liners forming the rounded ends. The forms were tied with Superior snap ties.

Deck forming

Still another crew formed the bridge decks, which were of several types. The most common was a continuous slab structure with spans of 28, 35, and 28 feet and a slab thickness widening from 12¾ inches at the center of the spans to 15¾ inches over the piers. These decks were shored with Western Spanall 9 horizontal joists supported on the piers and abutments and on a single falsework bent at the center of the 35-foot spans. Superior coil ties in the caps held the 4×6-inch angle clips that supported the Spanalls. The deck form was plywood.

Longer spans were carried on continuous steel girders. A typical structure had spans of 34, 42.5, and 34 feet, with the steel girders spaced 8.75 feet apart. Western Spanall joists were again used to span between the girders and support the deck form of ¾-inch plywood backed by 2×4's. These concrete decks were 7 inches deep.

With the forming completed for caps or deck, the concrete placement crew moved in. They used a Gar Wood ¾-yard crane and ½-yard concrete buckets to fill piles and column forms and to place con-

◀ For more facts, use Request Card at page 18 and circle No. 273

How Payscraper* power and power controls boost your dirt-on-fill delivery!



You get highest power-to-payload punch of all rubber-tired rigs in the 34-cu. yd. International 295 Payscraper. The fast-slugging, high-torque 6-cylinder International DT-817 Diesel is the Payscraper power plant.

The direct-start, 375-hp DT-817 is turbocharged to give you all-altitude, high-efficiency performance—power for cycle-speeding rim-pull—plus time-saving "no-lag" control power!

You power-shift the Payscraper, up or down—and the 4-speed planetary-type, torque-converter transmission provides load-speeding *automatic* direct-drive lock-ups in second, third, and fourth gears!

You power-steer the 150,000-lb. loaded Payscraper almost as easily as a 3,600-lb. automobile. Payscraper gives you the big control advantages of (1), exclusive International rack-and-pinion plus tandem pump steering system; and (2), 3-degree forward spindle pitch that improves scraper balance and prevents "nose-downs" in high-speed turns!

You power-control Payscraper dirt-handling actions with fingertip ease with the International PTO-driven Cable Control Unit. One cable drum of this simple planetary system actuates the apron and ejector; the other drum positions the bowl to control loading and spreading! Reach-easy Payscraper power brakes give you fast, positive stopping!

Ease into the bump-smothering Payscraper seat—press the direct-start button—power-shift the outfit into action. Compare the speed of loading, roading, and dumping the 122-inch bowl. See how the advantages of DT-817 Diesel power and complete, positive Payscraper power control can boost your dirt-on-fill delivery. Choose the 2-axle "295," or 3-axle, 34-cu. yd. "495." See your International Construction Equipment Distributor for a demonstration!



Here's your 76-page cost and production estimating book—newest, most authentic and complete guide for estimating material-moving costs—and for selecting equipment combinations for top profits, *anywhere!* Yours for the asking from your International Construction Equipment Distributor!

International® Construction Equipment

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Ill.

A COMPLETE POWER PACKAGE



...sitive power-...trol of all operations ...s safety, builds oper-... confidence — makes ..."haul-speed minded" ...help you get full ca-...ity and profit from ...scraper speeds up to ... mph. For example, ..., effortless tandem-...p power-steering ...es "the steering feel ...the steering wheel"— ...s positive, one-hand ...trol!



A Chevrolet winch truck carrying a Lincoln welding generator brings piling from the stockpile to the driver. Only one road ran into one end of the footing excavation, and the excavation was too narrow to allow the crane to swing; the winch truck had to deliver piling across the railroad track.



Tubular steel piles were used for a number of the bridges. These are actually rejected pressure pipe in 10¾ and 12¾-inch-OD sizes. These were also driven with the Delmag hammer, then cut off to grade and filled with concrete. The Dodge truck is used to carry the platform for the workman cutting off the piles. ►

(Continued from preceding page)

crete in the caps. Mall vibrators driven by Homelite generators provided the vibration. Concrete was supplied in transit mixers by Buffalo Ready Mix Co.

The transit mixers were run right up on the approach fills to the edge of the deck to place deck concrete. Hand-powered buggies transported the mix to the forms.

After the appropriate curing time, a stripping crew removed the forms, cleaned them up, and moved them ahead to the next location.

With the relatively large number of somewhat similar bridges, each of these crews could do its work at a particular site without any interference from the other squads. The work was well planned so that each crew always had a new site ready when it completed operations on one of the structures.

Personnel

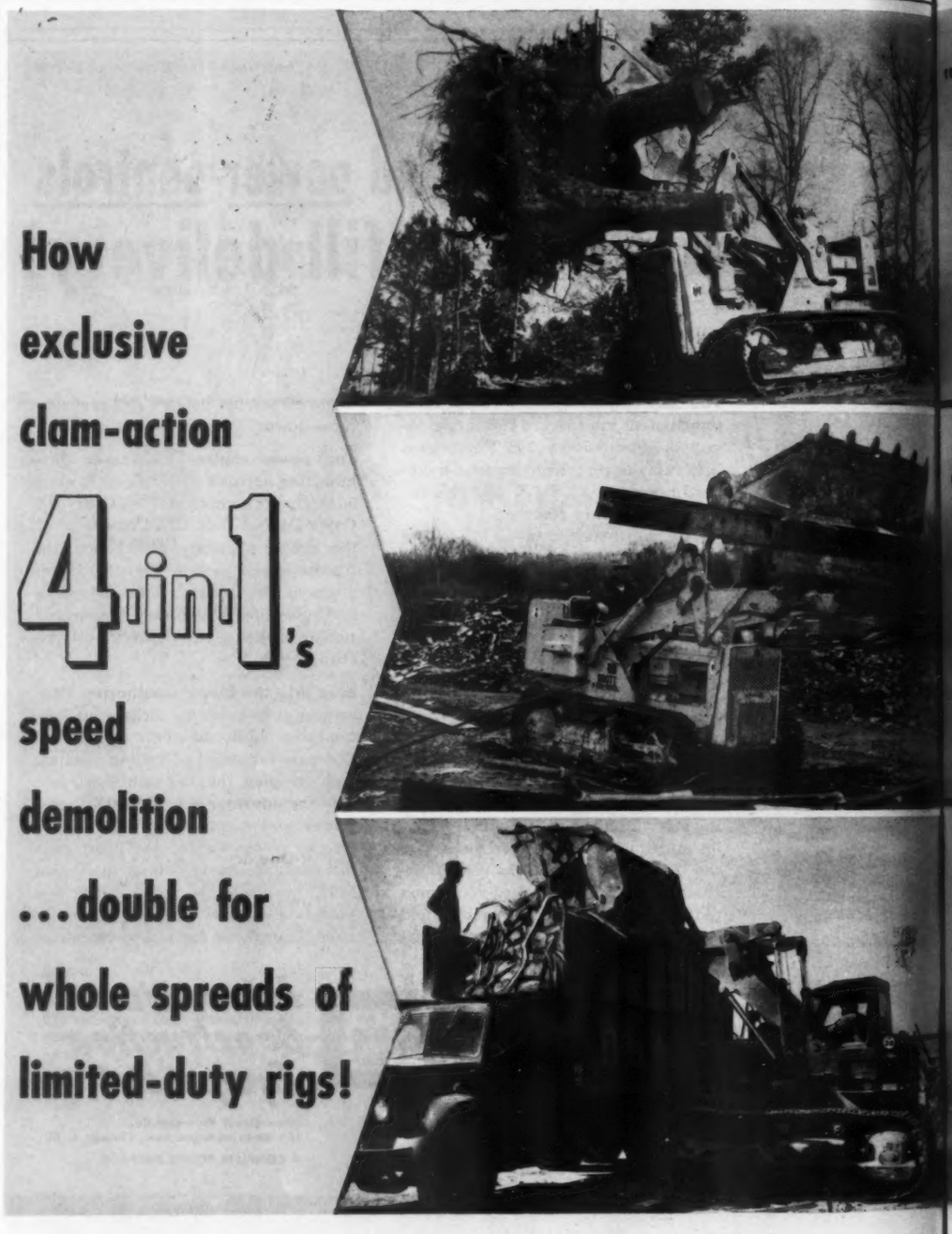
The four Husman brothers who head Husman Bros., Inc., followed these jobs very closely, assisting with some of the job supervision. Bill Rathburn served as superintendent of the project, and W. B. Mackey was piling foreman.

The resident engineer for the Wyoming State Highway Department on the work near Buffalo was John Jobe; the job staff included Bob Herzog, Roy Clauson, and Lyle Osborne. District engineer of the Sheridan District is George R. Anderson. R. G. Stapp, now deputy state highway engineer, was state construction engineer. J. R. Bromley is chief of the department. THE END

Albert Kahn elects executive officers

■ Albert Kahn Associated Architects & Engineers, Inc., Detroit, Mich., has re-elected George H. Miehls as chairman and treasurer and Sol King as president.

Other executive officers elected include Sheldon Marston, executive vice president; C. K. Scrymgeour, vice president and secretary; R. E. Linton, G. S. Whittaker, V. C. Wagner, and Saul Saulson, vice presidents. The 7-man board of directors was re-elected.

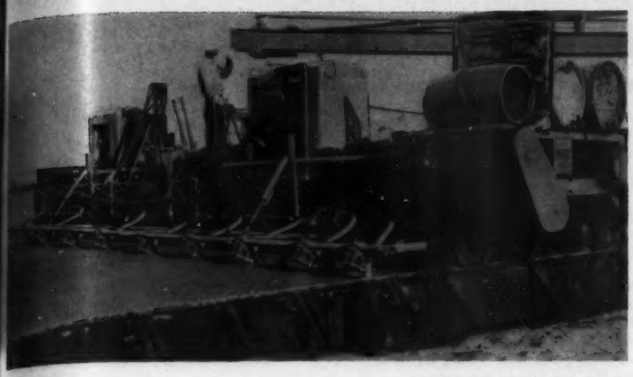


International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL®
DROTT®



Here's your 76-page cost and production estimating book—newest, most authentic and complete guide for estimating material-and-labor costs—and for selecting equipment combinations for top profits, anywhere! Yours for the asking from your International Construction Equipment Distributor!



Mounted on the concrete spreader, the Maginniss vibrator attachment permitted a big saving in the laying of 65,000 cubic yards of concrete.

Case history

Vibrator attachment saves contractor $32,000

By using a Maginniss Hi-lectric vibrator attachment, Dale Benz, Inc., of Phoenix, Ariz., is reported to have saved approximately 32,000 sacks of cement on one job. This was on the laying of 65,000 cubic yards of concrete floor in the repair shops and pavement in the parking area of the USMC Supply Depot at Yermo, Calif., on which Benz was general contractor.

The estimated $32,000 saving was on concrete specifications that called for 5.8 sacks of portland cement per yard with approved internal vibration —or 6.3 sacks if internal vibration was not used.

On the Yermo job, the Maginniss vibrator attachment was mounted on the concrete spreader. On jobs of limited runs between equipment moves, where a spreader cannot be used economically, the same Maginniss attachment can be mounted on the concrete finisher in front of the front screed to assist in spreading the mix, as well as to perform its primary function of internal vibration.

For further information write to the Maginniss Power Tool Co., Dept. C&E, 154 Distl Ave., Mansfield, Ohio, or use the Request Card at page 18. Circle No. 43.

"One week with 4-in-1 beats all summer with previous rig"

—Jack Doub,
Raleigh, North Carolina

Grabbing heavy "Siamese-twin" stumps, this International® Drott TD-15 shows exclusive 4-in-1 clam-action "bite"—doing tough subdivision land-clearing work ordinary loaders can't touch! "The first week after the TD-15 Four-in-One took over, we burned more stumps than the previous inadequate equipment disposed of all summer," reports owner Jack Doub, Raleigh, North Carolina. "There's no other loader to compare with 4-in-1 versatility, especially in land clearing. The TD-15 Four-in-One has plenty of power, plus unmatched balance to handle full loads without nose-down or strain."

"4-in-1 cuts need for extra rigs ...saves costly hand labor, too"

—M & M Wrecking Co., Inc.
Richmond, Virginia

M & M Wrecking Co., Inc., are contract and salvage wreckers. Their TD-6 Four-in-One is used to demolish structures, level and rough grade afterwards, and load out reusable materials and rubble. Photo shows their 4-in-1 ready to load a steel I-beam which it has picked up with clam-action "bite." Unit also dozes the rubble into piles. "In our work no two jobs are alike, and bucket applications change on nearly every pass," states B. Nelson Mills, the wrecking company's secretary-treasurer. "The 4-in-1 has cut the need for added machines, and saves costly hand labor, yet does our work far faster than any method previously used."

"Clam-action 4-in-1 can 'bite' and bottom-dump hard-to-handle materials"

—John J. Duane Company,
Quincy, Massachusetts

"Our TD-20 Four-in-One does an efficient demolition job on all types of buildings," declares John Duane, for the wrecking company of his name. "The 4-in-1 bucket has many advantages in this type of work as it can 'bite' hard-to-handle materials by clam-action and bottom-dump into high truck bodies. We are clearing 50 acres of buildings in west Boston and have loaded out three-fourths of the rubble with the 4-in-1. It is a time-saver and money-maker for us." Picture shows Mr. Duane's 4-in-1 bottom-dumping into a high-sided truck. Even "impossible" conglomerations of wood-and-masonry rubble, that frustrate ordinary buckets and multiply disposal costs, can be loaded with amazing speed and economy with the clam-action 4-in-1!

Why limit your income, either on construction or demolition, to what an old-style "single-action" loader can earn you? Try the 4-in-1 machine actions shown here. Then try 4-in-1 power-shovel-like, pry-over-shoe excavating power. Then, 4-in-1 full-size bulldozing performance. And then, versatile 4-in-1 "carry-type scraper" grading-spreading abilities. Prove you get a whole equipment spread of actions—and each 4-in-1 action "doubles" for one or more specialized machines! See how exclusive, shock-swallowing Hydro-Spring adds operating comfort and prolongs equipment life. See your International Drott Distributor for a 4-in-1 demonstration!

For more facts, use Request Card at page 18 and circle No. 274

New GM department for product reliability

■ The Truck & Coach Division of General Motors, Pontiac, Mich., has established a product-reliability department at staff level. Sheldon G. Little is in charge, assisted by C. C. Hursey, chief inspector, and Robert C. Kennedy, who will coordinate the engineering, manufacturing, and service departments in such areas as quality control.

Sheldon G. Little has been replaced as assistant chief engineer of the division by Donald J. LaBelle, formerly truck engineer in the engineering department. He will be responsible for truck-engine, chassis, and body engineering developments. Robert E. Field was appointed to LaBelle's former job. Field's position as administrative engineer has been filled by Harold N. Steinbaugh, formerly general supervisor of budgets and planning for the engineering department.

Armco elects directors

■ Joseph B. Hall, president of the Kroger Co., and James C. Donnell, II, president of the Ohio Oil Co., have been elected directors of Armco Steel Corp., Middletown, Ohio.

Parker-Hannifin names Case to Detroit office

■ William A. Case has joined the Detroit sales office of Parker-Hannifin Corp., Cleveland, Ohio. He will represent the company's industrial pneumatic and hydraulic products, including power cylinders, valves, accumulators, tube and hose fittings, presses, and riveting machinery.

Case has been in sales engineering at Detroit for the past two years.



Contractors improve the riding surface of asphalt pavement with

Leveling devi fi

A leveling device for an asphaltic-concrete finisher is fast gaining acceptance of many Kansas roadway contractors. The leveling bar, a 2 × 4, runs across the width of the machine. It carries a carpenter's level that the screed operator can see. He adjusts the screed screw to keep the bubble at the center. Two adjusting bars, also 2 × 4's, and two steel rods connect the leveling bar to the screed.

A simple device attached to a fi- ishing machine can improve the rid- ing surface of an asphalt pavement.

The leveling device does much to eliminate irregularities in the crown that would ordinarily be caused by



A rod dropping down from the leveling bar touches the surface of the adjoining pavement the machine is trying to match. The screed operator sees, slightly in advance, if the courses match. A lightweight hinged metal plate at the bottom of the indicator keeps the attachment from digging into the asphalt. A similar indicator is on the opposite side of the machine.



The adjusting bar is connected to the finisher at a pivot point, about two feet ahead of the screw handle, by a rectangular plate. Dropping down from the extreme end of the adjusting bar is a steel rod attached to the rear of the screed. There is no connection near the top of the screw handle. The device is connected at two points only —the pivot point and the tail end of the screed.



Even moving a blade-full of rock around the curve, there's no tion, no sluing to spill the load. TD-25's operator has separate speed trol of each track to get full-cross performance, full time. And only the TD-25 has the power plus of the start, turbocharged DT-817 Internat engine—that delivers 230 high-torque

HOW POWER-STEERED, POWER-SHIFTED . . .

TD-25 takeove

—on California mining operation

Even before all the blast dust has settled, this International TD-25 is slamming tons of shot-rock from the benches, so trucks can resume hauling to the processing plant. Then, at this gypsum mine in California, the "25" takes over the "shovel-feeding" chore—dozing full blades of rock upgrade, downgrade, and 'round the curves, to help keep the big dippers swinging full. And in between times, the "25" takes over its third tough project: benching new haul road around mountain slopes!

Three slam-bang rock operations to handle—it's a made-to-order situation for the Planet Power-steered TD-25!

"Dead-track drag" eliminated! You don't brake a track and "half-kill" your pull-power to turn, as you do with king-sized clutch-steered crawlers. With Planet Power-steering you simply change the speed of one TD-25 track—on-the-go, and with 2-finger ease! Around comes the fully-loaded TD-25—with "live" power on both tracks and both tracks pulling. Load-limiting "dead-track drag" is eliminated!

And combined, on-the-go Hi-Lo power-shifting lets you match power to load, instantly—forward or reverse. Just shift one track to high range—the other to low—to do slope-hugging, full-bite benching, or to operate straight ahead with off-center loads!

The "25" is platformed on new 7-roller tracks with double-box-beam frames. The design provides super undercarriage strength for slam-bang conditions—strength to match the full effort of the direct-start, high-torque DT-817 International Diesel engine.

Power-steer and power-shift the TD-25 with king-sized loads. Measure the bonus capacity you get with exclusive Planet Power-steering and Hi-Lo power-shifting. See how this control combination enables you to outearn other big rigs up to 50%. Then measure what it means to get this double-barreled advantage *only* in the TD-25—and as standard equipment *to boot!* Let your International Construction Equipment Distributor demonstrate.

International Harvester Co.
180 North Michigan Ave.
Chicago 1, Illinois
A COMPLETE POWER PACKAGE

International® Construction Equipment

achinery

devi finishing machine



Frank M. Drake, general construction inspector for the Kansas State Highway Commission, inspects a model of the leveling device that he invented for bituminous pavers.

d to a fin-
ove the rid-
pavement.
es much to
the crown
caused by

an uneven base. The invention is not designed, however, to correct long swells in the base.

Invented three years ago by Frank M. Drake, general construction inspector for the Kansas State Highway Commission, the inexpensive device has gained the approval of many contractors in the state. In fact, over half the bituminous-paving contractors in Kansas use the gadget on their finishing machines.

Here's the basic idea. You've seen screed operators place a carpenter's level along the length of the screed to detect a dip on one side of the base. This does not do the screed operator much good, however, because by the time he's corrected for the dip, the screed has already passed over it.

With the new device, the carpenter's level is placed ahead of the screed at about the center of the machine. The bubble registers a tilt when one set of tracks drops into the dip. This advance warning gives the screed operator plenty of time to make an adjustment on the screw.

Since the screed and the up-front level are tied together with a mechanical linkage, bringing the bubble back to level also brings the screed back to level. All the screed operator has to do is to keep his eye on the carpenter's level. When the bubble gets off, he slowly brings it back, using the normal screw adjustment.

Putting the leveler together

The device can be built for less than ten dollars with three lengths of 2×4, several steel connections, and a carpenter's level. Here's how it is put together:

One 2×4 crosses the width of the machine at the rear of the receiving hopper. This member—call it the leveling bar—holds the carpenter's level. The leveling bar is supported at each end by a 2×4 that slants back to a pivot point and screed connection. Call these two slanting 2×4's adjusting bars. Each adjusting bar pivots about a point located a couple of feet ahead of the screw. At the end of each adjusting bar is a steel rod that drops vertically down to a connection on the tail end of the screed. In this way, movement in the screed is transferred to movement in the adjusting bars which, in turn, transfer the movement to the leveling bar.

To supplement the device, contractors often mount an indicator arm at the end of the leveling bar. The indicator arm drops vertically down from the leveling bar to match a string line, a curb, or an adjoining course of asphalt. The screed operator adjusts the screed so that the end of the indicator arm follows closely the grade of the string line or other surface to be matched.

On a rubber-tire finishing machine, the leveling device is even more simple to build. It consists of a U-shaped steel frame crossing the machine at

◀ For more facts, use Request Card at page 18 and circle No. 275



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"Boulder-dozing" after blasting—The TD-25 does some "blasting" itself to move "big-as-a-house" hunks of rock aside. Heavy-duty TD-25 Dura-Rollers defy the rock-dozing "grind"—with the industry's thickest shells to prevent flex-ing—positive grit exclusion—and 1,000-hr.-interval lube capacity!

ake over three slam-bang rock jobs



(*Continued from preceding page*)

about its center. The ends of the frame are bolted to the yoke that pulls the screed. A carpenter's level is mounted on top of the frame.

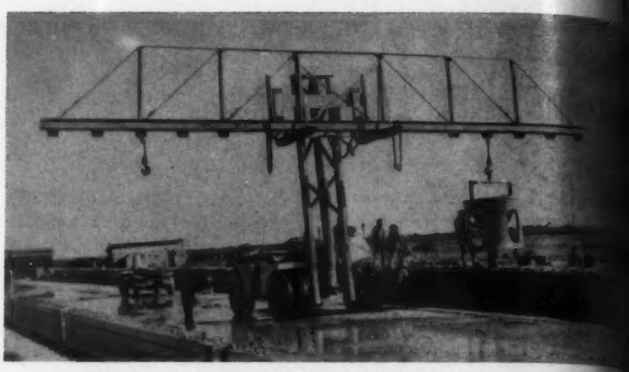
Simple operation, smooth results

What do contractors think about the new device? Pat Hershey, superintendent for G. W. Baker, contractor of Holton, Kans., says: "The rig allows us to get a more even surface. It's particularly good for resurfacing rough concrete pavement. Of course, you have to train your men to use it correctly. You have to keep the device in adjustment. You can't let the men use it for a coat rack."

Pat Hershey further reports that it doesn't take a screed operator with years of experience to get a smooth surface. With the help of the leveling device, a new man on a screed can learn how to turn out a good pavement in a relatively short time.

The construction company used the device while working on about a 4-mile stretch of the relocation of State Route 13 north of Manhattan, Kans. The asphalt was put down in two courses. Generally, on the binder course, the crawler-type finishing machine is guided by a string grade line. For this operation, one screwman kept his eye on the string line and the indicator device. The other screwman kept his eye on the carpenter's level. Keeping on the string line assured a straight smooth grade; keeping the screed level eliminated unevenness of crown. THE END

For more facts on spread on [illegible] circle No. 27[illegible]



The Clarklift CY-400, with a special hook attachment, positions a 5,0[illegible] pound bottom-dumping concrete hopper.

Case history

Fork truck reduces beam handling costs

A 30 per cent reduction in pour[illegible] time of prestressed-concrete bridge beams and a fuel saving of $22.[illegible] per day has been realized by the [illegible] of a Clarklift CY-400 fork truck, which replaced two mobile cranes [illegible] the Anchor-Wate Co., of Houston, Texas.

Equipped with a special hook attachment made by the firm, the Clark unit easily lifts and positions 5,0[illegible] pound bottom-dumping concrete hoppers. Once concrete beams have cured, the fork truck strips forms and carries the beams to stockpile areas.

Heaviest load handled in the operation to date is 19 tons, a load easily moved by the 40,000-pound-capacity Clarklift.

For further information write to the Clark Equipment Co., Industrial Truck Division, Dept. C&E, P. O. Box 31, Battle Creek, Mich., or use the card at page 18. Circle No. 59.

Addition to pier for Lake Michigan will be prestressed

■ A prestressed-concrete 1,250-foot-long extension of Navy pier facilities in Lake Michigan will be built by Raymond International, Inc., New York City.

The pier will have a 96-foot-wide deck of prestressed-concrete planks. The deck will be supported by concrete piles 80 feet long and 3 feet in diameter. Over 300 of these, to be made locally, will be driven to an elevation about 78 feet below lake level. Piles, with 4½-inch walls, will [illegible] eight 12-wire prestressing cables tensioned to 160,000 psi. Piles will have a maximum design loading of [illegible] tons; the concrete in the piles will have a minimum strength of 7,[illegible] psi.

Six-pile bents, spaced 24 feet apart, will be capped with formed and poured concrete. The prestressed concrete planks spanning the bents will be 4 feet wide and vary in thickness. The 6-inch-thick cast-concrete deck will act integrally with the prestressed planks.

RUGGED ROCK SHOVEL
FAST CYCLE DRAGLINE



Stripping a hill of rock, the "85-A" shovel combines powerful crowding action with smooth swings, loads out trucks fast. Dipper stick made of "T-1" steel. Air dipper trip for fast dump cycles.



Long reach of this 70-ft. boom speeds work as this "85-A" dragline dredges out a pond. Lorain's exclusive Square-Tubular-Chord boom is lighter and stronger, provides longer reaches, bigger capacities.

CONVERTIBILITY MEANS WORKABILITY WITH A LORAIN 85-A

Many rigs are convertible in name only. When it comes to on-the-job performance they show up as one-purpose machines.

Not the 2½-yard Lorain 85-A. It converts so easily that field changes are a breeze. On the job, it has the power and control to pay off on all kinds of work. Everything from tough shovel and hoe digging to dragline, clamshell or crane operations.

The "85-A" gets its versatility from its design. There are three power shafts for simultaneous hoist, swing and travel . . . two-lever "Joy-Stick" air power controls that blend operations for faster shovel-crane cycles. There's warranted "Shear-Ball" connection for rock steady swings, minimum maintenance . . . and a two-speed crawler with independent travel and air ease controls. Plus many others.

If you are looking for a heavy-duty rig that will boost your output and widen your workability, ask your Lorain distributor about the 85-A.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

LORAIN ON THE MOVE

PLANTS: In Lorain, Elyria and Bucyrus, Ohio . . . **PRODUCTS:** Power shovels, cranes, draglines, clamshells, and hoes on crawlers from ⅜- to 2½-yard capacity • Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 6000-lb. and 7000-lb. carrying capacity . . . **OUTLETS:** Lorain products sold and serviced by 249 distributor outlets throughout the world.

For more facts, use Request Card at page 18 and circle No. 276



On Giant Jobs Requiring Extra Care in Forming . . .

Contractors Use Symons Steel-Ply Forms

Symons Steel-Ply Forms have earned their excellent reputation by serving with speed and efficiency on a wide variety of large forming jobs . . . missile bases, airports, sewage treatment plants, expressways, bridges, filtration plants, schools, hospitals, shopping centers, culverts and reservoirs.

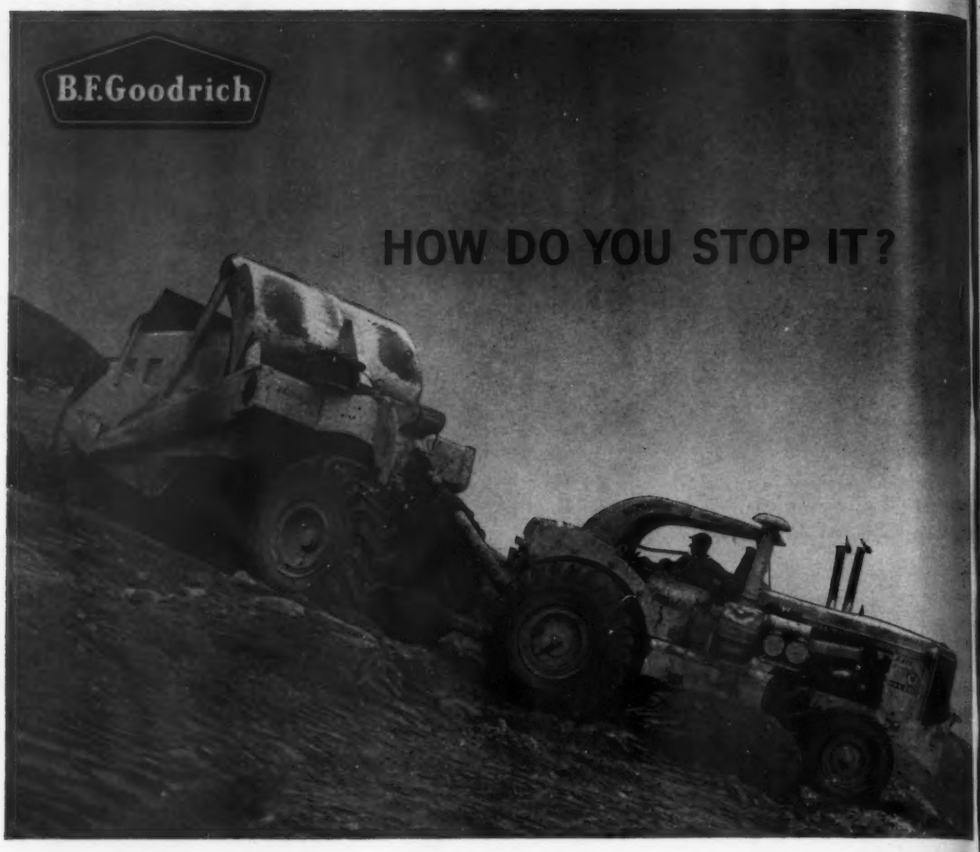
All of these jobs were handled by large contractors. Many are listed among the top 100 contractors in the country. Symons is privileged to have many of these contractors as customers. Some of them are . . . George A. Fuller, Turner Construction, Hilp & Rhodes, Gust K. Newburg, S. N. Neilsen, Sumner Sollitt, Terminal Construction, F. H. McGraw, Pomeroy, Standard Construction Co., Fruin-Colnon, Perini Corporation, Southeastern Construction Co., Peter Kiewit and Long Construction Co.

Contractors who use Symons Steel-Ply Forms can bid on almost any type concrete job. Symons Steel-Ply Forms can be rented with purchase option. Steel-Ply Form catalog sent *free* upon request.

Symons CLAMP & MFG. CO.

4249 Diversey Avenue Dept. IN Chicago 39, Illinois

Warehouses Throughout the U.S.A.





Hi-Torque brakes give uniform pressure, *full circle contact.* This provides maximum effective braking surface in the same size unit...double the braking power.

HI-TORQUE BRAKES!

B.F.Goodrich Hi-Torque brakes cut stopping distance approximately in half, compared to conventional two-shoe brakes tested on identical vehicles and loads. The added safety factor with these brakes means you can haul bigger loads more safely, operate on faster cycles. More difficult off-highway jobs can be tackled.

For *double the braking power* on your heavy weight vehicles, specify Hi-Torque brakes as original equipment. These brakes are now available on heavy dump trucks, tractor-scrapers, coal haulers, mine trucks and other big vehicles, from several manufacturers.

For complete information ask the manufacturer of your equipment, or write *B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Dept. CE-6, Akron, Ohio.*

B.F.Goodrich Hi-Torque brakes

For more facts, use Request Card at page 18 and circle No. 278

40

Case history

Welder slashes time for rebarring tractor tracks

Savings of over one-third in man-hours required to replace a set of worn grouser bars have been realized since the installation of a mechanized Lincoln Electric ML-3 Squirt welding unit at the plant of the Carolina Tractor & Equipment Co., Salisbury, N. C.

Grouser bars were formerly installed by manual welding with low-hydrogen electrode. A single pass across one side of a new 18-inch bar required more than 3 minutes of arc time. Now, states the company, a pass can be made in less than a minute of arc time.

The welding gun is self-propelled, with built-in motor drive. Flux is deposited continuously from a container on the gun, which moves along the joint at a travel speed of about 22 inches per minute.

The welding unit is compact and portable, with power supply and electrode wire feed in an integral unit. It can be adapted to many other routine welding jobs, offering high speed with a minimum requirement of operator skill.

For further information write to The Lincoln Electric Co., Dept. C&E, P. O. Box 3115, Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 48.



In this North Carolina repair shop, Lincoln Electric's Model ML-3 Squirt saves 33 per cent of the time formerly required for replacing a set of grouser bars.

New president named for Canadian Allis-Chalmers

J. D. Greensward has been elected president of Canadian Allis-Chalmers Ltd., a wholly owned subsidiary of Allis-Chalmers Mfg. Co., Milwaukee, Wis. He will be in charge of heavy-machinery operations in Canada; these include plants at Lachine, Que., and St. Thomas, Ont., and sales offices in major cities. Greensward was previously director of manufacturing, Industries Group, and a vice president of Allis-Chalmers since 1952.

He succeeds Harold M. Schudt, who has been made director of manufacturing, Allis-Chalmers International.

Case history

Vibrators save time cleaning concrete trucks

When concrete for the runways stuck to the sides of the dump bodies of the C. J. Langenfelder & Sons truck fleet, working on the John Foster Dulles Airport, near Washington, D. C., removal of the concrete by banging, bouncing, or shoveling wasted man-hours and production time.

The production superintendent purchased a Cleveland 1⅝-inch Type F pneumatic vibrator, commonly used to move materials from bins. The vibrator was bolted near the front of the dump body and connected with a hose to the air-brake system.

The vibrator easily moved the stubborn concrete out of the dump body. Immediately, the entire 30-truck fleet was equipped with Type F air vibrators, thus speeding up the placing of the runways.

The vibrator works efficiently on 80 pounds of air pressure from the truck air-brake system. A control valve is installed on the flexible rubber hose at the rear of the dump body.

According to the company, the vibrators have been operating since July, 1959, and no damage has been caused to the dump bodies of the trucks, nor have the vibrators themselves been any maintenance problem.

For further information write to the Cleveland Vibrator Co., Dept. C&E, 2850 Clinton Ave., Cleveland 13, Ohio, or use the Request Card at page 18. Circle No. 58.



WIX Filter Cartridges are engineered specifically for every engine in construction service . . . gasoline or Diesel—mobile or stationary — for lube, fuel and air. Replacement Cartridges are available for:

CATERPILLAR • DETROIT DIESEL
INTERNATIONAL • CUMMINS
MURPHY • ALLIS CHALMERS
and all other
Construction Equipment

FREE Filter Survey by WIX Factory-Trained Specialist, plus a Fleet Maintenance Manual.



Even under the worst working conditions and toughest time schedules your rigs run better with WIX. ALL your engines get ALL the advantages of Prescription Filtration with WIX Oil and Air Filters on the job. WIX Filtration effectively disposes of contaminating Dirt, Dust, Abrasives and Sludge — cuts down maintenance costs, steps up efficiency and helps you get the profit you figured on.

And — WIX will make a complete Filter Survey for you FREE . . . check the correct lube, fuel and air filter cartridge replacement for every one of your engines . . . set up your service schedule and sound inventory. No burdensome stock — no delays, because your local WIX wholesaler is your convenient source for fast filter service. Write today and arrange for your FREE Filter Survey.

wix® FILTERS

SPECIFIED FOR ORIGINAL EQUIPMENT AND REPLACEMENT BY MAJOR MANUFACTURERS

WIX CORPORATION • GASTONIA, N. C.
In Canada: Wix Corporation Ltd., Toronto
In New Zealand: Wix Corporation New Zealand Ltd., Auckland

For more facts, use Request Card at page 18 and circle No. 279



G-E ELECTRIC DRIVE

CUTS YOUR HAUL COSTS

Maximum Horsepower Utilization • Increased Grade Ability • Lower Maintenance • High Capacity Dynamic Braking • Greater Maneuverability • Longer Tire Life • Simple Operation • Proportioned Power • Bonus Productivity



G-E Rim Mounted MOTORIZED WHEELS
Provide All-wheel Payload Power

General Electric MOTORIZED WHEEL DRIVE cuts haul costs below those of comparable mechanical drives. This highly efficient drive outperforms other drives under all operating conditions, provides increased maneuverability, greater reliability, and requires less maintenance.

THE MOTORIZED WHEEL is a G-E traction motor bolted to the side of the vehicle and mounted within the rim . . . completely eliminating the need for axles, transmissions, differentials, and drive shafts. Electric power is supplied by an engine-driven generator.

FOR MORE INFORMATION on how you can put G-E's MOTORIZED WHEEL DRIVE to work and cut your haul costs, contact your nearby General Electric Apparatus Sales Office—or write to MOTORIZED WHEEL, General Electric Company, Section 102-01D, Schenectady 5, N. Y.

Progress Is Our Most Important Product

GENERAL ELECTRIC

For more facts, use Request Card at page 18 and circle No. 280



The base for the slip-form paving of an interstate highway near Brighton, Colo., is brought to exact grade by a Cat 12 grader with Preco blade control. The operator has only to watch the string and keep his guide indicator on it. The Preco unit keeps the other end of the blade in place.

Blade control and shop-built unit help get the grade right for

Precise work with slip-form paver

Precision grading of a narrow path for the paver tracks on either side of the slab proved to be the key to a smooth-finished pavement on a slip-form paving operation in Colorado. Using a new Rex slip-form paver, crews of Peter Kiewit Sons' Co. had no difficulty staying within the surface tolerance of ⅛ inch in 12 feet on a 6.5-mile 4-lane paving project on Interstate 80S (U.S. 6) near Brighton.

The small crew produced a satisfactory pavement and actually made better progress than conventional spreads. Using a single 34-E dual-drum paver, the crew averaged 1,500 linear feet of the 24-foot-wide 8-inch-thick ribbon with 4 or 5 fewer men than the usual spread requires.

The $920,000 project, awarded by the Colorado Department of Highways, permitted—but did not require—the use of the slip-form machine. The design provided two continuous ribbons of concrete for the four lanes of the two main roadways. All variations from the 24-foot roadway width were done with bituminous paving.

The contract included the placing of 6 inches of select subbase in advance of the concrete paving. Inside and outside shoulders, 4 and 10 feet wide, respectively, were built up with crushed-base material and surfaced with 1½ inches of hot-mix bituminous concrete. The roadways and approach lanes at the single interchange on this project were paved with bituminous concrete.

Grading for tracks

Knowing that the final results hinged on the accuracy of the grade, fine-grade foreman Dick Knox worked out a system for obtaining an ex-



When the planer piles up more material than it can pull along, the Traxcavator operator uncouples the rig and uses his bucket to remove the surplus. An 8-ton tandem roller goes over the base after the planer.

If it rolls on an axle or turns in a bearing or rides on a shaft if it slides in a groove or moves on a pivot if it bores or cuts or transmits pressure one of Sinclair's 500 specialized lubricants is designed to make it work better. For answers to your lubrication problems, write today to

SINCLAIR REFINING COMPANY

Technical Service Division
600 Fifth Ave, N.Y. 20 N.Y.

Sinclair

For more facts, use Request Card at page 18 and circle No. 281



A 24-foot-wide Rex planer pulled by a Traxcavator makes the final pass after the grader has brought the base to almost perfect finish. The path followed by the tracks of the planer was hand-graded for accuracy after the motor grader made its pass. The paver travels this same path.



The Rex slip-form paver travels on 20-foot-long crawler tracks that run on the prepared path outside the slab area. At front, a hydraulically operated screed spreads the mix, and a vibrating bar consolidates it. A reciprocating screed and float and burlap drag are at the rear. The Koehring 34-E with 2,000-gallon water trailer is kept supplied by a Timpte 5-batch body on a Ford truck.

tremely accurate fine grade. The trick was to get a perfect grade for the tracks of the fine-grader and paver in the area just outside the paving slab.

Workmen drove a line of steel stakes at 25-foot intervals down each shoulder outside the finished paving line. They marked the finished grade elevations on these stakes and pulled a tight string line to this grade.

The Cat No. 12 motor grader that took over the next operation was equipped with two special devices and a first-rate operator. One of the devices was the Preco automatic blade control to provide precise control of the blade while permitting the operator to concentrate all his attention on the leading corner of the blade.

The second was a shop-built gadget that followed the string line, helping the operator to keep precisely on grade. This gadget consisted of an adjustable hinged arm attached to the leading corner of the blade and projecting out over the string line. At its end was an ordinary butt hinge with one leaf hanging straight down to touch the string.

As the grader moved along, the spring-hinge mounting permitted the arm to swing back around each post and then snap into place over the line. The hanging hinge leaf acted as a telltale to indicate to the operator when he had the blade exactly on grade. This device, however, was set to keep the blade just a trifle high so that a light cut was left for the fine-grader.

Immediately behind the motor grader, a workman set 60D spikes exactly to subgrade in the paver track line opposite each of the steel stakes. Workmen graded this track by hand, using a second string line pulled between the spikes for a final check. This path, about a foot wide on either side of the pavement line, was graded just as closely as the gravel material permitted.

Fine-grader on tracks

A Rex pull-type planer, carried on 12-foot-long tracks, made the final cut. A Cat No. 6 Traxcavator pulled the planer, being especially careful to keep its tracks on the hand-graded path. If the planer picked up more material than it could carry, the Traxcavator operator uncoupled the planer and used his bucket to clean up the excess, casting it to the side

(*Continued on next page*)



NYGEN-BUILT

GENERAL TIRES

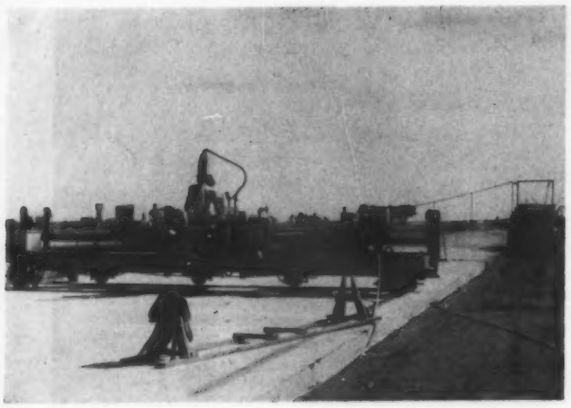
reduce downtime losses
to build up more profit for you!

Projects that rip ordinary tires and schedules to shreds are naturals for extra rugged General Off-the-Road Tires. With stronger-than-steel Nygen cord construction and a deep-digging, high-flotation tread, Generals are built to take on rock, stumps, mud, sand without let-up or let-down. And that means more work done...more profit counted every day of the job! Be sure of both on your next project with General Off-the-Road Tires.



THE GENERAL TIRE & RUBBER CO. • AKRON 9, OHIO

For more facts, use Request Card at page 18 and circle No. 282



A Concut gang saw cuts the transverse joints. Two Wisconsin engines drive its four blades. The pickup, background, has a long hinged arm that reaches across the slab so that curing compound can be applied by a hand-held spray.



Approximately 8 hours after concrete has been placed, transverse joints have been cut in the slab and a Concut saw is cutting the center joint to a depth of 2 inches.



Shouldering material is placed and shaped to gra... a single operation by a crew with an Ulmac U... spreader. The hot-mix surfacing course for the sho... will be laid by a bituminous paver.

(Continued from preceding page)

of the roadway. A Huber 8-ton tandem roller compacted the subgrade behind the planer, leaving it in perfect shape for the paver.

Never far behind the planer, the Rex slip-form paver placed concrete and finished the slab. A Koehring 34-E Twinbatch paver mixed the batches and placed them on the grade ahead of the slip-form machine. The paver towed a 2,000-gallon trailer tank that was replenished by a 2,000-gallon nurse truck.

The slip-form paver spanned the complete 24-foot roadway, traveling on 20-foot-long crawler tracks on each side. The machine has an overall length of 64 feet, including the 48 feet of trailing form. At the front, a hydraulically operated screed spreads the mix to approximate grade. A vibrating bar consolidates the concrete as a reciprocating screed and float do the finishing. A burlap drag at the end of the machine applies the final finish.

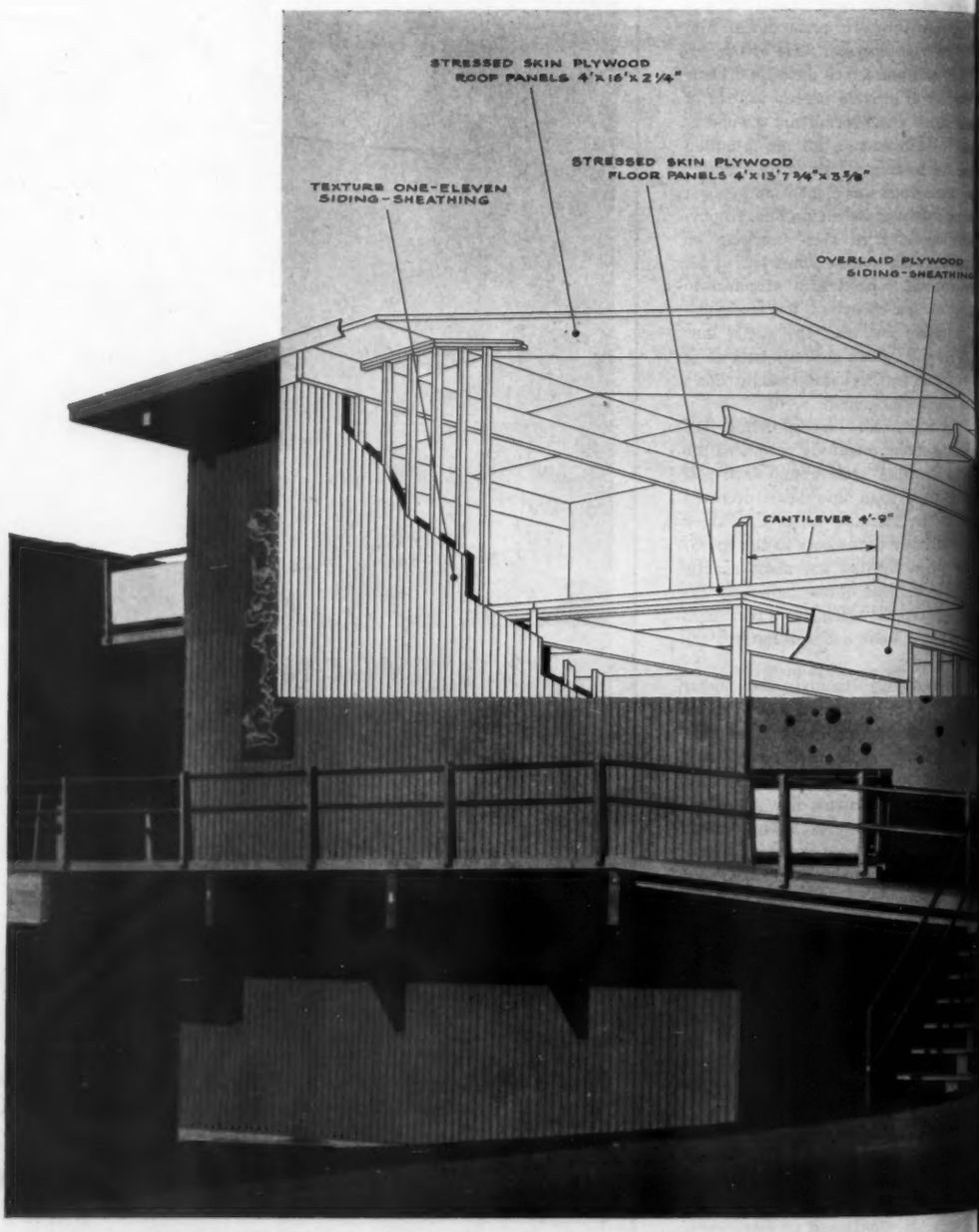
Curing and sawing

Kiewit sublet the curing, sawing, and jointing to the Hunt Process Co., Los Angeles. Hunt Process white-pigmented curing compound was applied with a hand-held spraybar operating from a gasoline-powered pump. Since the operator could reach only half of the slab from each side, he sprayed one half of the width for a distance of 100 feet or so and then walked around the newly placed slab to spray from the other side. The barrels of compound and the pump were carried on a pickup on one side. A long trussed arm, attached to the pickup, reached across the slab to carry the hose to the far side.

The sawing crew went to work about 8 hours after the concrete was placed. The transverse joints were sawed by a Concut 4-blade gang saw, while the longitudinal center joints were sawed with a single-blade Concut self-propelled saw. Both saws used diamond blades to cut the joints to a depth of 2 inches. Later, the joints were filled with Flintseal hot-poured rubber-asphalt compound.

Inspectors for the Colorado Department of Highways checked the finished pavement with a Viking Hi-

Fir plywood components and St... cut over-all costs 15%n





A drive-through arrangement for picking up aggregate and cement is used by the batch trucks. The aggregate plant is being fed by a 38-B crane. The cement plant is a Butler 365-barrel unit.

Lo detector to be sure that the surface met the specified smoothness requirements.

Machine places shoulder

The aggregates for the shoulders were produced in a nearby pit by a Cedarapids unitized plant and trucked to the roadway. A Cat No. 12 motor grader with an Ulmac U-500 spreading attachment received the material from the trucks and spread it uniformly over the width of the shoulder. The lift of approximately 6 inches was placed in a single pass and compacted by a Bros 9-wheel roller and a Terrapac vibrating roller.

A Barber-Greene bituminous paver laid the 1½-inch course of hot-mix bituminous surfacing on the 10-foot-wide outer shoulders. The motor grader with the Ulmac spreader placed the hot-mix for the surfacing of the 4-foot inside shoulders.

Batch plant

The aggregates and cement for the paving batches were proportioned from separate plants. The batch trucks first stopped at a Blaw-Knox aggregate batcher. Here a Bucyrus-Erie 38-B crane with 1½-yard Owen clam bucketed the sand and two sizes of rock to a 3-compartment bin holding 75 cubic yards. Automatic twin batchers weighed out the required proportions and dropped the materials into the trucks.

The cement was picked up from a Butler 365-barrel twin cement batcher. The cement was trucked to the plant from the Ideal mill at Boettcher, Colo., by Verl Harvey of Adams City. Harvey used a fleet of Beall trailer-transports carrying 140 barrels per load and pulled by Kenworth diesel trucks.

The contractor's fleet of Ford batch trucks was equipped with Timpte 5-batch dump bodies fitted with air-operated gate releases. The truck drivers released the batch gates by pushing a series of buttons mounted on the truck control panel.

Personnel

On the supervisory staff for Peter Kiewit Sons' Co., were superintendent R. L. "Dick" Porter, paving superintendent Roy Rekansrud, plant foreman Ray Hegarty, fine-grade foreman R. C. "Dick" Knox, and foreman of the base and shouldering operations W. W. "Bill" Scott.

Resident engineer Ivan Johnson and assistant resident engineer Jim Nimon headed the inspection staff for the Colorado Department of Highways. The district engineer of the Denver District is George N. Miles. Staff construction engineer for the department is W. J. Walsh, and chief engineer is Mark U. Watrous.

THE END



A Viking Hi-Lo detector is pushed along by Jim Nimon of the highway department to check on the smoothness of the pavement. Marks seldom have to be made to indicate spots showing a deviation of more than 1/8 inch in 12 feet.

and Sturd-i-wall" construction .5% n 26-unit apartment

Two relatively new time-saving techniques keyed to the use of fir plywood were credited with saving $16,000 on this apartment project. It cost some 15% less than comparable construction using other materials.

Stressed skin plywood components cut labor 75% compared with conventional roofing and flooring methods. Precisely engineered and factory fabricated under controlled conditions, panels had fir plywood top and bottom skins pressure glued to light lumber framing, with insulation sandwiched inside. Used at all three levels, they provided ceiling and underlayment or ceiling and roof decking in one unit.

Plywood stressed skin components like these offer maximum strength with minimum bulk. Their use is growing on buildings of this size and larger, for structural superiority and sharp reductions in on-site labor —in some cases as much as 85%.

"Sturd-i-wall" construction (one layer of plywood as combined siding-sheathing) was the other cost cutter, saving an estimated 15% on wall costs. Texture One-Eleven® (vertically grooved) plywood and medium density overlaid plywood were nailed directly to studs. The Sturd-i-wall system has proved its strength and economy in home building. As seen here, it offers comparable advantages in larger projects as well.

For more information about fir plywood, write (USA only):

DOUGLAS FIR PLYWOOD ASSOCIATION

TACOMA 2, WASHINGTON

—a non-profit industry organization devoted to research, promotion and quality control

DFPA TESTED QUALITY



Stressed skin panels have wiring run through; insulation and soundproofing are excellent. Panels are light, easily handled by two men.

Texture One-Eleven nailed to studs made a stronger, more rigid wall than one with conventional sheathing and siding—in half the time.



TILLICUM APARTMENTS
LOCATION: Winslow, Wash.
ARCHITECTS: McCool & Morgan, Seattle
CONTRACTOR & OWNER: Edmund Stafford, Winslow
COMPONENT FABRICATORS: Panelbild, Lynnwood, Wash.

For more facts, use Request Card at page 18 and circle No. 489



Supported by rollers at each end, the Stow vibrating screed is pulled along, striking off the surface and vibrating the concrete.

For more facts on insert, use Request Card at page 18 and circle No. 285

Case history

Screed finishes slabs placed on piling

On the new bypass of U. S. 1 at St. Augustine, Fla., The James H. Cragg Construction Co. had to pour slabs on an old lake bed that, because of soil conditions, could not be compacted to support the slab. Therefore, the 2 to 3-inch slump reinforced concrete had to be placed on piling.

Because of these conditions, heavy road machinery could not be used. The contractor employed a Stow 34-foot vibrating screed with an adjustable crown feature in the center, and two Power Paks.

The concrete was placed and raked to the approximate height of the forms. Then the screed, supported by rollers at each end, was pulled along, striking off the surface true to grade and vibrating the concrete at the same time.

The firm rated the screed's performance as exceptional and says it saved a considerable amount of time.

For further information write to the Stow Mfg. Co., Dept. C&E, 66 State St., Binghamton, N. Y., or use the Request Card at page 18. Circle No. 62.

Case history

Special plant halves asphalt production cost

A specially designed Hetherington & Berner tandem-mixer asphalt plant reportedly gave such satisfactory service to the Cadillac Asphalt Paving Co., of Detroit, that the firm has since bought two more special plants.

The plant features two 5,000-pound mixers—one above the other. The material is dry-mixed in the first mixer. Then, immediately after the bitumen is added, the batch is discharged into the second mixer for completion of the wet-mixing period. Meanwhile, the first mixer is being charged with the next dry batch.

The result of this procedure is a total 42-second cycle as against a 65-second cycle required in a single-mixer process. The contractor points out that, translated into production costs, this means a labor saving of approximately 55 cents per ton over the conventional-type operation.

States the company: "The fuel economy, savings on labor, and versatility of this operation enabled us to cut the cost of manufacturing a ton of asphalt practically 50 per cent as compared to the cost of the operations of our other three plants in the metropolitan area of Detroit."

For further information on H & B asphalt plants, write to Hetherington & Berner, Inc., Dept. C&E, 701-743 Kentucky Ave., Indianapolis 7, Ind., or use the Request Card at page 18. Circle No. 57.

English city builds road of red, rubberized asphalt

■ A stretch of red-hued thoroughfare has been opened in Birmingham, England. The 6-lane highway features a "flower-box" divider.

On a concrete foundation, a 2¾-inch base was placed which contained rubberized asphalt. On top of this was laid a 1¼-inch wearing course of red-colored rubberized asphalt mixture dressed with ½-inch red, precoated chippings.

146 SCREW JACK MODELS TO CHOOSE FROM

THE WORLD'S MOST COMPLETE LINE!

SIMPLEX SCREW JACKS



SCREW JACKS 4-WAY HEAD—19 MODELS
10 to 24 tons capacity. Ball bearing, Malleable Housing, Safety peep hole.

RATCHET HEAD—10 MODELS
20 to 24 tons capacity for close-quarter operation.

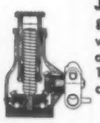
TRAVERSING BASES and TRAVERSING BASE SCREW JACKS
7 Models—10 to 50 tons cap. Vertical & Horizontal travel.



REEL JACKS—3 MODELS
5 and 15 ton capacity.

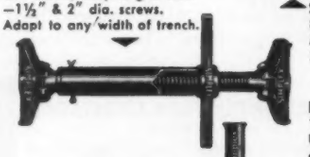


PLANER JACKS —5 MODELS
2 to 8 tons capacity. 2¾" to 7" high. 1" to 4½" Lift. Swivel head & lock screw.



JOURNAL JACKS
8 Models, three with aluminum alloy housings. 15 to 50 tons capacity.

TRENCH & TIMBER BRACES
22 Models, Drop-forged steel —1½" & 2" dia. screws. Adapt to any width of trench.





SHORING JACKS
8 Models, Forged Steel, Machine cut screws. 25 & 35 ton cap.

PUSH & PULL JACKS
12 Models Util-A-Tool—the tool of a thousand uses.



WRITE FOR CATALOG: MECHANICAL 60.

Other screw types: Steamboat Ratchets & Load Binders, MINE ROOF AND TIMBER JACKS, Rail Puller & Expander, and Gear & Wheel Pullers, Bumper Jacks.

Look for further information on Hydraulic and Lever Jacks in other advertisements.

TEMPLETON, KENLY & CO.
2511 Gardner Road
Broadview, Illinois

For more facts, use Request Card at page 18 and circle No. 283

A WILLIAMS DIGGER FOR EVERY PURPOSE!











Available in twelve models and a wide range of hole diameters from 12 to 96 inches and depths to 110 feet. Whether truck, tractor or specially-mounted the Williams Diggers will serve any purpose and, in this respect, are virtually custom rigs for the earth-boring contractor. Williams Diggers are unexcelled for sinking holes for everything from electric line poles to architectural foundation piers.





HUGH B. WILLIAMS MFG. CO.
8330 Lovett Ave. • Dallas, Texas
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JOSLYN MFG. & SUPPLY CO.
2101 Corinth St. • Dallas, Texas
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For more facts, use Request Card at page 18 and circle No. 284



FIRST – BY TODAY'S STANDARDS ...CURTISS-WRIGHT EARTHMOVERS

Today's construction industry is a tough business . . . Competition is keener, jobs are bigger, bidding is tighter than ever before. To stay on top under these conditions, you need equipment with the features that guarantee you top production. In the scraper field, that equipment is made by Curtiss-Wright. Model for model, right across the board, the Curtiss-Wright line piles up more production and makes more profit per hour than any competitive machine. Prove this on your job! Weigh the loads, time the cycles, check the bowl factors, compare the hourly profits against any other scraper — see for yourself what makes Curtiss-Wright the industry's fastest growing scraper line.

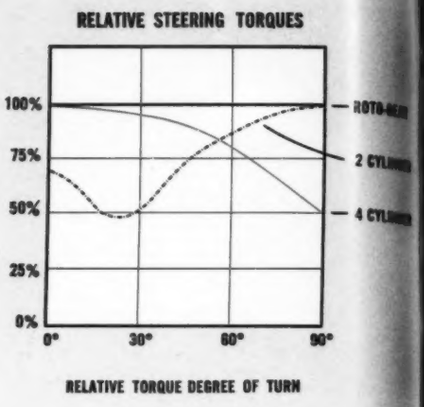
SOUTH BEND DIVISION
CURTISS-WRIGHT CORPORATION
SOUTH BEND, INDIANA
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TURN PAGE

SELF-PROPELLED SCRAPER STEERING SYSTEMS

Control is of great importance when handling loaded scrapers with weights in excess of 80 tons. Steering must be smooth and responsive in all stages of operation. Anything short of this sacrifices production, safety and operating ease.

The graph on the right compares typical steering torque curves for the three steering systems now used by major scraper manufacturers. The curves shown are actual torque curves from current models. As you can see, the Roto-Gear torque is consistent throughout the steering arc, while the torque of the 2 cylinder and 4 cylinder ram & lever systems vary considerably at different points in the turn.



TWO CYLINDER STEERING

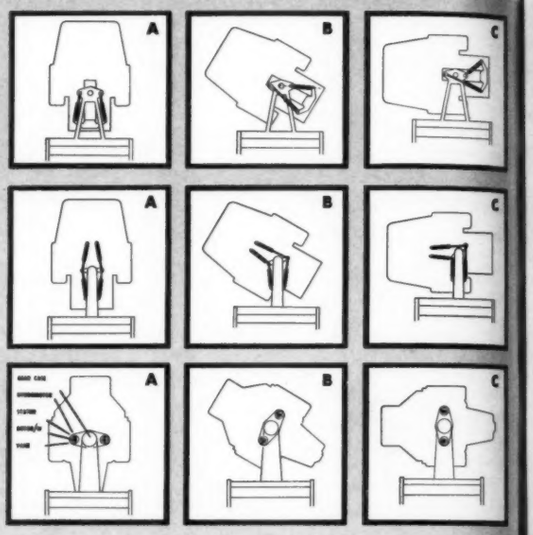
In this system, each of the two double-acting rams works in opposition to the other. Note that in the position indicated in figure 'B', the right arm is in a direct line with the pivot point and can neither push nor pull. Therefore, the right ram must coast through this point leaving the left ram to do the work. This accounts for the loss of torque at this point as shown on the above graph.

FOUR CYLINDER STEERING

In this system the two left rams work together and the two right rams work together. All rams are double acting. With this system, the more nearly the rams are in a straight line, the more effective the steering. As they approach a right angle position, relative to each other, they lose their effectiveness and suffer a loss of steering power. This will be noted on the graph above.

ROTO-GEAR STEERING

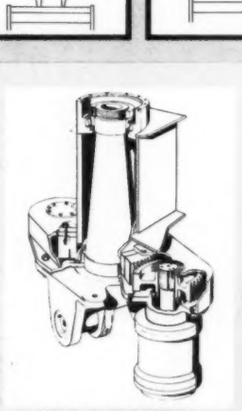
In the Roto-Gear system, there is an even constant pressure against the Hydromotor vanes at every point in the turning arc. Both Hydromotors are in full operation at all times—providing even power throughout the turn.



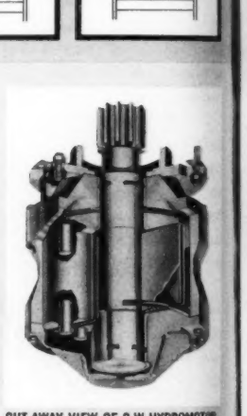
ROTO-GEAR STEERING SYSTEM

With Roto-Gear steer, there are no hydraulic rams. Instead, compact Hydromotors operate the steering gear. As the turn is begun, the hydraulic pump sends fluid into one side of each Hydromotor, causing pressure against the rotor vane. The rotor of each Hydromotor then turns, causing the steering gear to turn in relation to the turn of the steering wheel. The advantages of this system, used ONLY on the Curtiss-Wright scraper line, are (1) Smooth, responsive steering throughout the entire turn, and (2) Elimination of awkward, external steering rams.

For complete details on all the C-W performance features, see your Curtiss-Wright distributor.



DETAIL OF HYDROMOTOR GEAR MECHANISM



CUT-AWAY VIEW OF C-W HYDROMOTOR

SOUTH BEND DIVISION

CURTISS-WRIGHT

CORPORATION

SOUTH BEND, INDIANA

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FREE . . . An attractive binder for the complete C-W Job Information series is available from your Curtiss-Wright distributor. Ask for it

AD NO. 52-83 PRINTED IN U.S.A.



Case history: The T & T Contracting Co., of Brooklyn, was the low bidder on a $5.5 million sewer job for Queens Borough, New York City. This job called for a double trunk sewer to be run almost through the middle of the borough. The average sewer depth was 32 feet. To prevent cave-ins, the plans required 2,500 steel soldier H-beams to be driven to a depth of 50 feet on either side of the central sewer excavation. Total length of this contract was 12,000 feet. Because much of the excavation went through built-up residential sections with structures often within 20 feet of the H-beams, T & T decided to drill the holes and drop the H-beams into them. For this purpose, they used a Koehring Ka-Mo drilling rig comprising 48 feet of screw flights driven by a 32-hp hydraulic motor. Actual drilling was handled by an HT high-spiral 18-inch Trainer PolerBore auger. A small steel plate was welded to the bottom flight and the top of the auger to obtain a continuous flow. The PolerBore reportedly worked very well, handled frozen ground conditions and all underground obstructions, and even cut through pavement. For further information write to **Trainer Associates, Inc.**, Dept. C&E, New Castle, Del., or use the Request Card at page 18. Circle No. 142.

Case history

Rebuild shovel gears; save over $10,000

The Buckley Construction Co., of Philadelphia, recently was faced with the problem of whether to replace or reclaim the worn swing-ring gear and pinion and the travel-ring gear and pinion on a 1¾-yard shovel. The decision made was to rebuild, and by doing so the company estimates it saved over $10,000.

To replace all the gears would have cost approximately $11,500. Total rebuilding costs, including material and labor, both welding and finishing, ran just under $1,500.

The gears were rebuilt with 3/16-inch Stoody Build-Up (iron-powder coating), a machinable, high-tensile-strength alloy. Gear teeth were rebuilt slightly oversize and then finished to the desired dimension with a portable hand electric grinder.

Reassembled, the shovel is said to have operated as smoothly and efficiently as a new unit. The shovel is still in operation, with service life on the reclaimed gears expected to at least equal that of standard replacement parts.

For further information write to the Stoody Co., Dept. C&E, 11904 E. Slauson Ave., Whittier, Calif., or use the Request Card at page 18. Circle No. 38.



Close-up view of rebuilt swing-shaft pinion gears and vertical drive-shaft bevel gear. Smooth deposits of Stoody Build-Up required a minimum amount of grinding to be done.

H&L Teeth that really dig!



H&L WEAR-PLATES CUT DIGGING COSTS!

WEAR-PLATE SHOVEL ADAPTER
Simply replace wear-plate when worn, and adapter is restored to near new condition. Simply replace, with use of hammer and punch.

WEAR-PLATE RIPPER SHANK
Replaceable wear-plates at point of maximum wear insure long shank life.

INCREASE PRODUCTION WITH SHARP H&L POINTS

There is no substitute for FORGED HIGH ALLOY STEEL

SEE YOUR NEAREST DEALER or write:

H&L TOOTH COMPANY
1540 SOUTH GREENWOOD AVE.
MONTEBELLO, CALIFORNIA

For more facts, use Request Card at page 18 and circle No. 286



A Pfingsten felt-laying machine spreads asphalt ahead of felt on the roofing job for the Safeway warehouse distribution center in Omaha. Felt rolls out as the rig is pulled forward. Asphalt is distributed through holes at the bottom of the container.

Special machines speed roofing

For many years, the roofing contractor has got by with a hand-mop-and-bucket operation. Now, on the big jobs, specialized equipment speeds the work and does away with much of the hand labor.

Hot asphalt is pumped to the roof. Felt-laying machines spread the asphalt and lay the felt in one easy operation. Gravel is carried to the roof by a continuous conveyor. Power buggies buzz around the roof, releasing asphalt and spreading gravel at the same time.

All of these methods were used to roof the large Safeway warehouse distribution center in Omaha, Nebr. Olson Bros., Inc., Omaha, handled the roofing for the general contractor, Lippert Bros., Inc., Boone, Iowa. The distribution center was designed by the Leo A. Daly Co. of Omaha.

Tilt-up walls

The Safeway center is made up of three 1-story buildings: a 450×450-foot partially refrigerated grocery warehouse; a 240×876-foot wholly refrigerated warehouse for perishables and frozen foods; and a 100×200-foot truck-repair garage. All the buildings are framed with steel-pipe columns tied together with steel beams and bar joists. Exterior walls are built of large tilt-up concrete panels. Panels adjacent to refrigerated areas are insulated on the inside with a layer of cork.



"Gravel Gertie" is the name of this Pfingsten rig, which distributes gravel and asphalt. The forward tank holds about 240 pounds of asphalt; the hopper holds some 1,500 pounds of gravel.

Roof heavily insulated

Because of the extensive refrigeration, thick layers of insulating material were built into the roof. Above the deep-freeze area, for example, 8 inches of cork covered the metal deck. Above other refrigerated areas was up to 9 inches of Fiberglas. The normal thickness of insulation in nonrefrigerated areas was 3 inches. Covering the insulation was a 4-ply asphalt and felt roof. The roof was topped with a protective layer of gravel.

Olson Bros., Inc., made fast work of putting on the roof insulation. The material rode an inclined conveyor to men waiting on the roof. The men used 4-wheel carts to pull the stacks



Asphalt Products Company's Model S-80, the sixth Simplicity bought by Dick Shorts of Youngstown, Ohio.



Barrett Division's Model S-100 at Cincinnati, Ohio. This is Barrett's fifth Simplicity.



Model S-200 of Bituminous Products, Buffalo, N. Y., their fourth Simplicity.

FACTS vs ARGUMENTS

Get the FACTS and NOT THE BULL on two important points before you buy any asphalt plant. The outstanding success of the Simplicity S-200 has caused claims (verbal) that our S-100 is our S-100 speeded up. Here are the FACTS:

Model	S-80	S-100	S-200
Rated Capacity (T.P.H.)	75 to 100	100 to 150	150 to 200
Dryer Volume (Cubic Ft.)	603	1,018	1,571
Dryer Speed (R.P.M.)	12	11	9
Air Volume (C.F.M.)	30,000	35,000	40,000
Fan Speed (R.P.M.)	900	800	800
Screen Area (Sq. Ft.)	96	140	180
Screen Speed (R.P.M.)	800	800	800
Bin Capacity (Tons)	50	50	85
Weighing Capacity (Lbs.)	6,000	7,500	10,000
Mixer Capacity (Lbs.)	5,000	6,000	8,000
Mixer Volume**	50.63	65.6	93.1
Mixer Speed (R.P.M.)	56	50	45
Total Weight	187,385	228,865	262,535
Total Price*	$94,500.00	$116,400.00	$132,800.00
Price Per Pound	.504	.508	.505

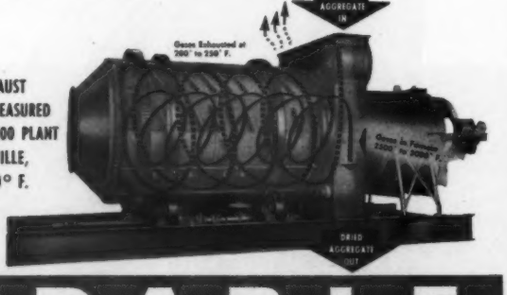
* Prices subject to change without notice. ** Cu. Ft. Below Shafts.

(No price increase for more than a year)

The only Dryer that starts at once without "warming up" . . . stops immediately without "cooling down"! Aggregates exposed to hot gases for twice the length of time. Aggregates placed in path of hot gases by cross showering.

Fuel bills are lowered 30% or more and any mechanic knows a horizontal Dryer is easier to operate and keep in top condition . . . takes less power, is easy on bearings.

RED LINES show flow of aggregates through outer and inner shells. Hot gases in inner shell are INSULATED and ABSORBED by cold wet material in outer shell.



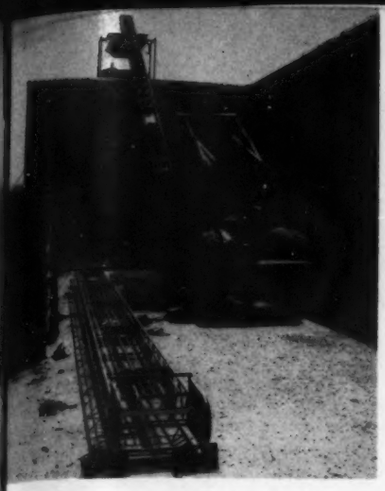
ACTUAL EXHAUST TEMPERATURES MEASURED JUNE 1959 ON S-200 PLANT AT DOUGLASVILLE, GEORGIA—180° F.

There's a **SIMPLICITY PLANT NEAR YOU**
On request, we'll be glad to send you the name and location of a nearby installation.

DEPENDABLE

THE SIMPLICITY SYSTEM CO.
FROM BUILDER TO BUYER BETWEEN MEN WHO KNOW
CHATTANOOGA 6, TENNESSEE

For more facts, use Request Card at page 18 and circle No. 287



◄ This setup delivers gravel to the roof. A Minneapolis-Moline tractor, which is using a front-end loader, brings gravel to a hopper that feeds a Mulkey bucket conveyor. This runs to a hopper at the roof, where power buggies load. The conveyor at left is used for sheets of insulating Fiberglas.



Hot asphalt is pumped to the roof from a 2,000-gallon tank, while another stands by. The trailer-mounted tanks are pulled by a Chevrolet truck to a railroad tank car for refilling. Tanks are heated at the site by butane bottled gas. ►

of Fiberglas to the point where it was needed. The metal deck was striped with lines of hot asphalt to hold the material in place.

Felt-laying machine

A machine, made by Pfingsten Engineering Co., Chicago, simplified the felt laying. The hand-pulled rig held a roll of felt and a container of hot asphalt. The asphalt drained through holes at the bottom of the container. The felt unrolled itself as the rig was pulled forward. A man walking behind the machine smoothed down the felt with a broom.

When the container ran out of asphalt, it was refilled from a 30-gallon drum. The insulated drum was mounted on a steel framework resembling a wheelbarrow. It was easily pushed from place to place on its two wheels.

Hot asphalt was pumped to the roof from two 2,000-gallon tanks, mounted on truck trailers, and one 900-gallon tank. The tanks were heated by bottled butane gas. When a 2,000-gallon tank ran out of asphalt, a truck pulled the trailer-mounted tank to a railroad siding. The heated asphalt was transferred directly from a tank car.

The arrangement for getting roofing gravel to the top of the 1-story buildings was also efficient. At ground level, a Minneapolis-Moline tractor that is equipped with a front-end loader attachment loaded the gravel into a receiving hopper. The material dropped to a bucket conveyor that carried it to a hopper on the roof. An operator loaded material from the

(Continued on next page)



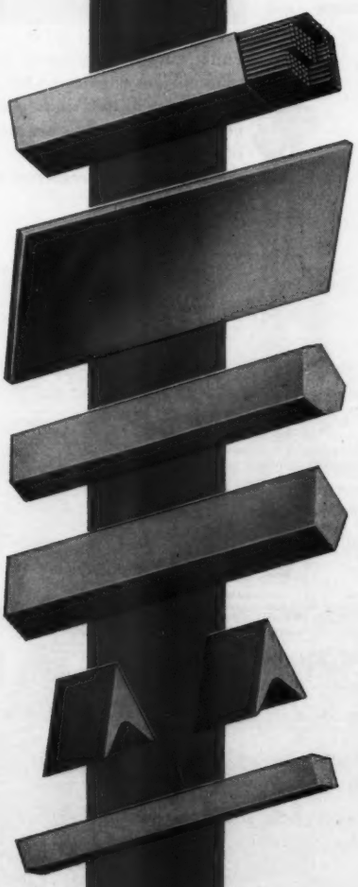
A 30-gallon drum for hot asphalt supplies the felt-laying machine. It has two walls with an insulating material between. The drum is filled from the main line rising from a ground tank. The workman is drawing off a bucket for miscellaneous work.

TISCO®

LONG WEARING

TIMANG®

MANGANESE — NICKEL STEEL WELDING PRODUCTS



◄ **WELDING RODS** — TIMANG-NICKEL MANGANESE for build-up, joining and repair of manganese steel. Has same manganese content, work harden-ability and wear resistance as cast manganese.

TIMALLOY composite type rod for joining manganese and carbon steel. Also an excellent rod for build-up and repair of manganese castings.

◄ **HOT ROLLED PLATES** — TIMANG-NICKEL MANGANESE for chute liners, dump truck beds, rock and ore hauling trailer bottoms, dragline buckets, rebuilding power dippers, and fabricating new parts. Plates supplied as rolled (not annealed).

◄ **SPECIAL SHAPES** — HOT ROLLED TRACTOR GROUSER BARS for repair of tractor treads. Timang bars in mill lengths up to 20 feet. High carbon bars in lengths of 10 feet — cut to size required.

◄ **WEDGE BARS** — For shovel tooth build-up. The hot-rolled manganese-nickel steel bars can be supplied in mill lengths up to 20 feet, but normally are furnished in 36 inch lengths.

◄ **TOOTH REPOINTERS** — Weld on cast manganese or alloy steel repointers for rebuilding worn dipper teeth — various shapes and sizes available on request.

◄ **APPLICATOR BARS** — Hot rolled rounds, squares, and flats available in mill lengths up to 20 feet or cut to required length.

For more information write to:



TAYLOR-WHARTON CO.

DIVISION OF HARSCO CORPORATION

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HIGH BRIDGE 18, NEW JERSEY

PLANTS: Cincinnati, O. — Birmingham, Ala. — Easton, Pa.

SALES OFFICES: New York — Chicago — San Francisco

For more facts, use Request Card at page 18 and circle No. 288

(*Continued from preceding page*)

roof-level hopper into his power buggy.

Power buggies for gravel asphalt

Nicknamed "Gravel Gerties," these gravel and asphalt-carrying power buggies are also manufactured by Pfingsten Engineering Co. Powered by a 2-cylinder gasoline engine, an 800-pound machine carries about 1,500 pounds of gravel and 240 pounds of hot asphalt. As it rolls along, it distributes the asphalt in front of the gravel.

Although production on the job was hampered by rainy weather, the contractor laid from 15,000 to 20,000 square feet of completed roof on a good day.

Carl Lange was superintendent for Olson Bros., Inc. The super for the general contractor was M. S. "Mick" Landers. THE END

Case history

No traffic interference with materials hoist

The problem was to hoist remodeling materials to the fourth and fifth floors of a downtown office building when the building owners forbade the use of freight or passenger elevators, and the city officials refused permission to block the sidewalk and reroute pedestrian traffic over a pedestrian bridge.

The Ben Schaefer Building Co., of Cincinnati, found the answer in a



The Buck HoisTower lifted all materials and mechanical equipment to the working level on this Cincinnati building. In building a fifth-floor extension, the HoisTower was used to hoist concrete as well.

Buck HoisTower. It occupied about half the sidewalk width in a heavy shopping and traffic area, where the company undertook an extensive remodeling job of the entire fourth floor and a portion of the fifth for the Fifth/Third Bank. Sidewalk traffic flowed smoothly and safely past the construction work; street traffic remained open in all lanes.

It took just a day to erect and brace the 76-foot, 2,000-pound-capacity tower against the building, the contractor reports. When one end of the floor was completed, only a few hours were required to move the tower down the street for completion of the job.

For further information write to the Buck Equipment Corp., Dept. C&E, 720-D Anderson Ferry Road, Cincinnati 38, Ohio, or use the Request Card at page 18. Circle No. 56.



Case history

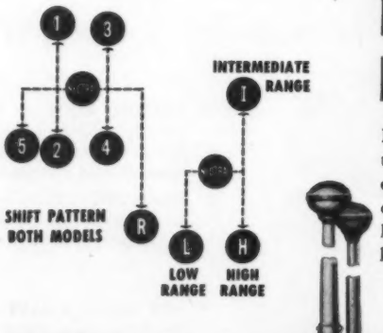
Automatic blade controls save on finish grading

Three Caterpillar No. 12 motor graders, each equipped with Preco automatic blade controls, are doing all the finish grading in the construction of streets for Salton City, a new community in southern California.

Paving contractor is the Salton Paving Co. Milo LuBanko, one of the owners, says, "If we didn't have the Preco we would probably have to set three rows of stakes on 50-foot stations to get the same results. This would amount to 315 stakes per mile set with an instrument. Instead we use a tape to locate the center-line stakes from lot location stakes—this can be done quickly and easily. We are using only 26 stakes per mile of road, and we don't have to have a grade checker following each machine to uncover and locate grade stakes."

NEW Fuller Heavy-Duty 5-

10 closely-spaced gear splits plus deep reduction ratio desig



[redacted]

[redacted]

Fuller now offers two new 15-speed transmissions engineered for on and off-highway diesel truck operations demanding high capacity, long wear life and ease of operation . . . for logging, mining, construction, oil-field work, aggregates and ready-mix

Advantages of the new transmissions include:

1. Extremely short installation dimension, which permits shorter wheelbase for tractors which formerly incorporated main and auxiliary transmissions.

2. Maximum operational flexibility with not only 10 closely-spaced gear splits, but also 5 speeds ava

Model 15-G-1120 Fuller Transmission Cutaway View

FULLER TRANSMISSION DIVISION MANUFACTURING COMPANY KALAMAZOO, MICHIGAN

◀ In the job of building 600 miles of streets for a new community in California, Preco blade controls on Cat motor graders save the paving contractor time and money.

According to LuBanko, through the use of Preco automatic blade controls the firm saves almost $43,000 per year.

For further information write to Preco, Inc., Dept. C&E, 6300 E. Slauson Ave., Los Angeles 22, Calif., or use the Request Card at page 18. Circle No. 42.



Case history: Subsurface exploratory work with this mobile rig helped Kiewit and Condon-Cunningham, joint-venture contractors, to offer an accurate low bid for a $12 million railroad yard. The Explorer B-40 drilled 50 test holes over the 526-acre site near Avon, Ind., to pinpoint wet areas and soil variations. The bid was then submitted for earthmoving, sub-ballast for 70 miles of track, and 70,000 linear feet of drain tile. For further information write to **Mobile Drilling, Inc.**, Dept. C&E, 1244 N. Cornell Ave., Indianapolis 4, Ind., or use the Request Card at page 18. Circle No. 60.

ity 5-SPEED TRANSMISSIONS

ratio designed for combination on and off-highway applications

d ready-ma ble for low range operation through
ew transm deep reduction in the auxiliary.

3. A wide choice of optional gear ratios to match every job requirement.

4. Weight reduction obtained by eliminating support brackets, joints, cross members and a propeller shaft.

For full details on the Fuller 15-G-1120 and 15-H-1120 Transmissions, ask your dealer or write Fuller Manufacturing Company.

Model 15-G-1120: Standard Gear Ratios

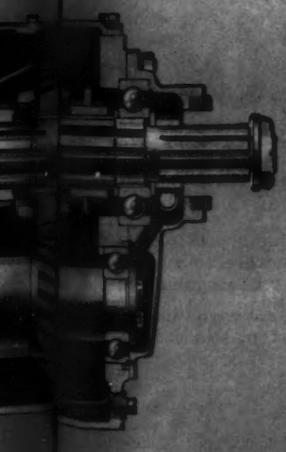
	SPLITS—OVER-HIGHWAY			LOW RANGE—OFF-HIGHWAY		
Speed	Split	Ratio	% Step	Speed	Ratio	% Step
10th	O'Drive-High	.636	33	5th-Low	1.33	
9th	O'Drive-Int.	.844	19			57
8th	Direct-High	1.00	33	4th-Low	2.09	
7th	Direct-Int.	1.327	32			76
6th	3rd-High	1.76	33	3rd-Low	3.68	
5th	3rd-Int.	2.32	41			86
4th	2nd-High	3.27	33	2nd-Low	6.83	
3rd	2nd-Int.	4.33	51			100
2nd	1st-High	6.54	33	1st-Low	13.67	
1st	1st-Int.	8.68				

Model 15-H-1120: Standard Gear Ratios

	SPLITS—OVER-HIGHWAY			LOW RANGE—OFF-HIGHWAY		
Speed	Split	Ratio	% Step	Speed	Ratio	% Step
10th	O'Drive-High	.636	33	5th-Low	1.68	
9th	O'Drive-Int.	.844	19			57
8th	Direct-High	1.00	33	4th-Low	2.64	
7th	Direct-Int.	1.327	32			76
6th	3rd-High	1.76	33	3rd-Low	4.65	
5th	3rd-Int.	2.32	41			86
4th	2nd-High	3.27	33	2nd-Low	8.63	
3rd	2nd-Int.	4.33	51			100
2nd	1st-High	6.54	33	1st-Low	17.27	
1st	1st-Int.	8.68				

Optional Gear Ratios: Models 15-G-1120, 15-H-1120

Overdrive: .85, optional at extra cost
Overdrive: .74
Reverse: 5.06



Subsidiary of **EATON** *Manufacturing Company*

For more facts, use Request Card at page 18 and circle No. 389

Case history

Excavator speeds trenching operation

The big new Park Royal Estates housing development in Clarkson, a suburb of Toronto, Ont., Canada, presented a difficult problem of trenching and grading. It was necessary to provide 6-foot metal pipe lines for drainage of the area.

A total of 1,600 linear feet of trench 11 feet deep, and with a 9.6-foot bottom width and 14-foot top width, had to be dug through shale and rock.

A crawler-mounted Gradall Model G-1000 was brought in for the job. According to contractor George Wimpey & Co., Ltd., this machine not only was able to dig the trench to dimension, but it completed the first 450 feet of the big trench in only 28 hours.

On the same project, 1,200 running feet of form ditch for drainage was dug in 35 hours. This ditch is open with two angles to hold while digging, and in finished form the ditch has really four slopes to hold. In light to medium shale, the Gradall worked at a rate of 70 yards per hour with a 48-inch bucket. In the rough cut, the Gradall handled 275 yards per hour, with four passes per minute.

For further information write to The Warner & Swasey Co., Gradall Division, Dept. C&E, 5701 Carnegie Ave., Cleveland, Ohio, or use the Request Card at page 18. Circle No. 114.

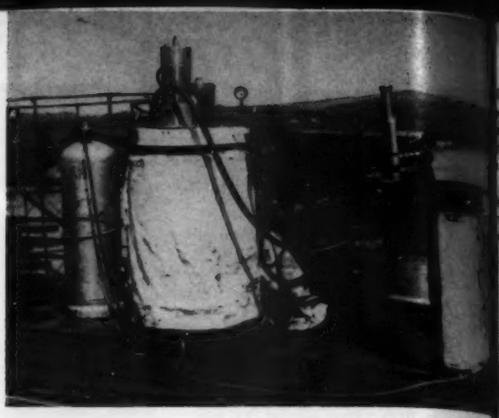


The Gradall dug 450 feet of 11-foot-deep trench in 28 hours. Wrist action of the 48-inch bucket made the handling of rock slabs an easy and fast trenching operation.



New rust-preventive coating helps rail line

Slash 60 per cent off bridge maintenance costs



A new rust-prevention technique has reduced bridge maintenance costs by 60 per cent for the New York, New Haven & Hartford Railroad.

The new method was first tried on a 6,800-foot-long, 258-foot-high bridge at Poughkeepsie, N. Y., a span linking the New Haven's line and its western freight terminal at Maybrook, N. Y. It worked so well that the line will probably convert to this type of maintenance for all its bridge structures.

The new chemical-mechanical rust-preventive coating, called No-Ox-Id and made by Dearborn Chemical Co., Chicago, was used in place of paint. Since this material never dries hard, as paint does, flaking and peeling do not occur. The only way the coating can come off is by mechanical abrasion, and this isn't likely to happen on a bridge. If it does, spot-coating repairs the damage.

The No-Ox-Id was speedily and efficiently applied with equipment specially developed for the process by Binks Mfg. Co., Chicago, maker of spray-painting equipment. A recently developed staging made by Spider Staging, Inc., Renton, Wash., was used instead of conventional scaffolding.

Costs

Preparation of the surface for No-Ox-Id was relatively simple. A chisel-edged scraper attached to an air nozzle was used to get the paint off and blow away the scale and flakes. It was not necessary to sand or grind down to bare metal.

The big saving on the job was in labor. Painting a bridge of this type would have cost $200,000. The cost of spraying it with No-Ox-Id was only $45,000. There was a labor saving of over 75 per cent. And the job was done in one-third the time that



This Worthington Blue Brute rotary compressor, the only one needed for the work, supplies air to spray guns, pumps, and cleaning tools. All equipment that had to be on the bridge was out of the way of rail traffic.



Model 772 digs to 5'6" depth in cutting widths from 10-24". Model 773 is identical except for wider track gauge pad widths.

BARBER-GREENE W
YOU A 25-100% DI

The big difference: Hydra-Crowd transmission that lets you instantly dial maximum crowding speed for any ground condition

Barber-Greene wheel ditchers obsolete all others digging to 5'6" and 7' depths by out-producing them from 25 to 100% every day. And your Barber-Greene delivers a peak production pay-off in: 1) variable ground conditions; 2) frost, caliche, and hard pan-type; and 3) sticky gumbo-type digging.

Exclusive dual-range Hydra-Crowd transmission makes the big difference, enabling your operator to dial *instantly* the maximum crowding speed for any ground condition, or reverse *instantly*, too. He selects from *infinitely variable* crowding speeds *independent* of wheel and conveyor drive. No four-operation gear shifting. No guessing about gear ranges. No stopping to change speeds.

More Barber-Greene exclusives that contribute to precision performance with lowest cost of operation include:

- Flexible drawbar between chassis and boom continually absorbs digging shocks, reduces transfe of twist and tilt from wheel to chassis when dig ging curves or over uneven ground.
- All-hydraulic spoil conveyor independent wheel speeds for instant selection of infinitel variable speeds—instant reverse.
- Hydraulic controls give greatest accuracy in dig ging to line and grade.
- Crawlers are easily adjusted in one-tenth th time of ordinary crawlers.
- Automatic overload guard, hydraulic brake and hydraulic wheel hoist protect both man an machine.

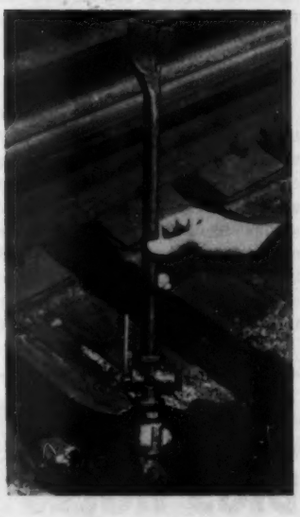
Call your Barber-Greene distributor for your on job demonstration. You'll get proof why you can't afford to dig ditch with any other machine.

The No-Ox-Id rust-preventive coating ...d on the railroad bridge at Pough-...sie, N. Y., is transferred from the ...rial drum to the drum supplying ... air guns by a Binks transfer pump. ...heating arrangement around the ...ginal drum warms the No-Ox-Id, ...ning it from a gelatinlike consistency ...a flowing material.



This Spider staging was an important time saver on the job. Lightweight and extremely mobile, it consists of a cage that can be raised or lowered by cable. Platforms are adjustable. ►

This chisel-edged cleaning tool was the only surface-preparation tool used on the job. Air-powered, it removes loose scale, dirt, and paint in one operation. An air jet blows the residue away. Cleaning and coating are done while the staging is in one position.



painting would have required.

The cost of spray equipment, including guns, pumps, compressor, hoses, and Spider staging, came to $31,000. Projected cost figures indicate that scaffolding would have cost considerably more than the Spider staging.

The selection of spray equipment for the job was based on several important criteria. The basic needs of the system were minimum overspray characteristics, mobility, freedom from line and nozzle clogging, and ability to supply uniform air-atomizing pressures at the spray guns.

To cut the overspray, New Haven and Binks engineers decided to use internal-mix spray guns. This held misting and material waste through overspray to a minimum. Binks Model 18 and Model 24 spray guns were used for the work. The Model 18 is a pistol-grip type of gun; the Model 24 was fitted with an extension.

For the sake of mobility, only the material drums, pumps, and compressor were kept on the deck of the bridge. Hoses ran a maximum distance of about 300 feet from the material drum and compressor over the side of the bridge and to the men on the staging below.

A Binks pump was chosen to supply material to the sprayers. Five of these pumps were used to cut down the need for moving back and forth. The compressor used was a gasoline-engine-powered Worthington.

The No-Ox-Id coating, in a gelatinlike state before use, was heated in its drum with a jacket-type heater that partially wrapped around the drum. A propane-gas burner provided the heat that turned the material into a flowing form. A Binks transfer pump was fitted to the top of the drum to bring material to another drum used to feed the spray guns. This second drum had a Binks air-powered pump fitted to the top to supply material to the guns. The heating jacket —as well as the air scrapers used to remove paint—were made under the supervision of John Kenyon, general



odel 774 shown with standard 5'6" depth, 30" ...dth wheel. Optional model digs to 7' depth.

...WHEEL AND DEAL ...% DITCHING BONUS

MODEL 774—INDUSTRY'S BIGGEST BUY FOR DIGGING 7-FT. DITCH

The new Barber-Greene Model 774 Wheel Ditcher can be equipped with a 7-ft. wheel with complete options and accessories for 50% less than you pay for any other wheel ditcher that can dig this depth. Call for prices and be convinced.



Crawler, rubber-tired Barber-Greene Vertical Boom Ditchers cut low costs trench from 5½ to 24-in. wide and to 7 ft. deep. Model 784 is shown.

Manufacturer of the only modern ditcher line

Representatives in Principal Cities of the World

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...ONVEYORS • LOADERS • DITCHERS • ASPHALT PAVING EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 290

(*Continued from preceding page*)

superintendent of bridges and building at New Haven.

Spray guns were equipped with large nozzles that cut down on line and nozzle clogging and required less frequent cleaning than the smaller types.

Staging instead of scaffolding

The main advantage offered by the Spider staging was conservation of time. This particular type of staging eliminates much of the moving and adjusting required by conventional scaffolding. A typical Spider stage consists of an open cage, suspended by a wire cable. This cage can be raised or lowered by an air motor that gets its working air pressure from the same compressor that supplies air to the spray equipment. Once the cage was set in place at one point along the bridge, the maintenance crew began coating at the top and continued on down to the bottom of the bridge as the cage was lowered. The cage was operated by the man on the platform.

The work platforms were also adjustable to size. End sections can be moved outward a distance of 2½ feet, adding 5 feet to the total length of the platforms. Sections can be added or removed, depending on the working area desired. THE END

For more facts on Insert, use coupon or Request Card at page 18 and circle No. 293



Workmen spread Visqueen transparent polyethylene film, used as a concrete curing agent in the 52-story Union Carbide Building under construction in New York City.

Case history

Polyethylene film used as concrete curing agent

In the New York City skyscraper being built by the Union Carbide Corp., 2 million square feet of Visqueen 2-mil polyethylene film has been used as a concrete curing agent, with an additional quantity of 6-mil film used as a water vapor barrier.

The Knickerbocker Construction Co., which is handling the job for Union Carbide, reports that it is highly pleased with the results thus far obtained from using this film in the building. The firm cites the benefits of Visqueen's greater flexibility, lighter weight, and varied widths, and states that because it can be re-used several times the over-all cost is reduced even more.

For further information write to the Visking Co., Plastics Division, Dept. C&E, 6733 W. 65th St., Chicago 38, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 63.

Case history

Steel ring wales speed open-shaft construction

In just 29 days the Greenfield Construction Co., of Detroit, completed the open-shaft, subgrade foundation project for the East Nine Mile pumping station in Warren, Mich., with the aid of Commercial steel ring wales.

Said field engineer James F. Peters: "The ground on our particular project was so hard that, had we used a caisson as originally planned, it would have 'hung up' at a depth of approximately 25 feet. Commercial steel ring wales, and the open-shaft construction they made possible, were a most important factor in the on-

DIGS HOLES
SETS POLES

plus
PORTABLE POWER
FOR ACCESSORIES
AND TOOLS



Highway's Heavy-Duty
"HC" Digger—Blue Ox-mounted
with added working features

The Highway "HC" earth-boring machine can be easily mounted on the "Blue Ox" vehicle or heavy-duty truck. The compact unit connects to the transfer case with a single drive shaft. Easily available controls allow one-man operation. Highway's exclusive telescoping derrick enables 75′ poles to be set. The "HC" machine digs holes from 9″ to 36″ in diameter, 20′ deep.

YOUR MOTOR
GENERATES 110-120
AC FOR "PLUG-INS"



UTILITY DIVISION
HIGHWAY TRAILER COMPANY
HEADQUARTERS: STOUGHTON, WISCONSIN
Manufacturers of Public Utility Bodies • Earth-Boring Machines • Pole and Cable Reel Trailers • Winches • Power Take-Offs • Service Accessories • Commercial Trailers • Dry-Bulk Haulers • Cargo Containers — Land, Sea and Air
SALES AND SERVICE IN PRINCIPAL CITIES

For more facts, use Request Card at page 18 and circle No. 291

PORTABLE WIRE FEED CONTROL OFFERS GREATER SPEEDS
FOR OPEN ARC OR SUBMERGED ARC WELDING



Hobart Manumatic Semi-Automatic Welding Unit being used to hardsurface Gradall Bucket with Hobart tubular wire—open arc.

NEW "Manumatic"
HOBART
FEEDS WIRE AUTOMATICALLY

FASTER WELD DEPOSITION CUTS COST on hardsurfacing, buildup and regular mild steel welding. New automatic wire feed control brings higher weld deposition rates and higher duty cycle. Deposits welding wire at least three times faster than ordinary welding methods. Hobart's "Manumatic" is compact and easy to use anywhere for shop or in the field welding. It readily connects to any AC or DC welder of sufficient capacity. Be sure to get the complete story on this high speed semi-automatic welding process.

- USE EITHER OPEN ARC OR SUBMERGED ARC
  Feeds solid or tubular wires with proper equipment and accessories.
- ATTAINS HIGH DEPOSITION RATES
  wire speed up to 360 inches per minute. (Up to 400 ipm with optional gear box.)
- LOW COST
  permits both large and small shops to use the "Manumatic" continuously or part time.

Write, wire or phone today— no obligation

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"Manufacturers of the world's most complete line of arc welding equipment"

For more facts, use Request Card at page 18 and circle No. 292

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bituminous distributor



ittleford's new Spray Master Distributor has been designed with one idea in mind... o provide the construction industry with the most advanced unit ever produced. ngineering and design features of the new Spray Master are ***the first really big hanges in the bituminous distributor field in the last twenty years.***

ake sure you get the most for our money--the Spray Master

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address .....

city ..... *zone* ..... *state* .....

name of firm .....

position ..... *telephone number* .....

Littleford offices in Cincinnati, Ohio and Albany, New York

ITTLEFORD
Bros., Inc.

INTRODUCING THE

NEW SPRAY MAST

bituminous distributor by Littleford



The new Littleford Spray Master illustrated above is equipped with aluminum jacketing, catwalks and skirting. You can purchase the style you desire... with or without these deluxe features. Regardless of style selected, the spray bar and exclusive features shown on this page are standard equipment. Whatever your choice of style, the Spray Master contains the most advanced engineering designs and labor saving features available to the industry today.



1. SINGLE LEVER CONTROL

. . . no confusing lever, one easily understood type hand wheel. Control operations.



2. ROOMY OPERATOR'S PLATFORM

. . . no need to crawl up, under, around, or hang on. The Littleford Spray Master has a large, roomy platform provided for the operator's safety.



3. MODERN CONTROL PANEL

. . . all important controls are located in this panel board within easy reach and view of operator.



4. HINGED HOUSING for EASY MAINTENANCE

. . . working parts are easily accessible through Littleford's new exclusive hinged cover maintenance. One piece assembly swings back permitting easy adjustments when necessary.



5. UNOBSTRUC OPERATOR'S VIEW

. . . no part of spray bar is hi by overhanging obstruction. operator sees all of the ba... knows how the bar is ope

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For detailed information on the NEW Littleford Spray Master return the postage paid Reply Card on this page.



This shaft, 72 feet deep with an ID of 55 feet 10 inches, was bottomed out and concreted in less than a month due in large part to the use of Commercial steel ring wales.

schedule completion of our foundation project."

Sunk in hard ground of stiff, moist, blue clay, the lined open shaft measured 72 feet deep with an inside diameter of 55 feet 10 inches.

The steel ring wales also eliminated the need for special outside concrete forms, since rings and wood lagging served as a form. Close-tolerance fabrication, and easy handling and installation of the wales helped speed progress on the job and required only four men for actual installation.

For further information write to the Commercial Shearing & Stamping Co., Dept. C&E, P. O. Box 239, Youngstown, Ohio, or use the Request Card that is bound in at page 18. Circle No. 50.

Case history

Admixture reduces loss of water by 87 per cent

One of the initial problems encountered by the M. M. Sundt Construction Co. and M. J. Bevanda Co., Inc., in the construction of the runway and taxiway at the Marine Corps Auxiliary Air Station at Yuma, Ariz., was assuring a constant supply of water.

To solve this, an earthen reservoir of approximately 250,000-gallon capacity was built. It was then filled with water and allowed to stand for 24 hours. The loss during this time was 80,600 gallons.

The reservoir was then refilled, and 400 gallons of SS-13 admixture was thoroughly mixed with the water. Under the same weather conditions as the first test, the water was again allowed to stand for 24 hours. The loss sustained was 10,800 gallons, or a reduction in loss of 87 per cent.

SS-13 consists of resinous polymers and heavy atoms mixed in a carrier of common diesel fuel. Its function is to increase the ionic attraction of the soil particles for water, thus increasing the thickness of the hygroscopic envelope of water around each particle. This decreases the voids or passages through which water can move, and retards the flow through soil.

For further information on this water-conserving admixture, write to the SS-13 Sales Co., Dept. C&E, P. O. Box 4425, Phoenix, Ariz., or use the Request Card at page 18. Circle No. 111.

A study of highway user taxes—including their source and disposition—is being made in California by the state Highway Users Conference.

ASCE award presented for the St. Lawrence Project

■ The St. Lawrence Power and Seaway Project has been named the outstanding civil engineering achievement of 1960 by the American Society of Civil Engineers. At a ceremony held on May 19, plaques were awarded to Robert Moses, chairman of the Power Authority of the State of New York; W. Ross Strike, first vice chairman of the Hydro-Electric Power Commission of Ontario; A. G. Murphy, chief engineer of the St. Lawrence Seaway Authority; and Martin W. Oettershagen, deputy administrator of the St. Lawrence Seaway Development Corp. Honored also Col. L. W. Olmstead, representing the U. S. Army Corps of Engineers which handled the engineering for the project.

Frank A. Marston, president of ASCE, presented the awards. The 12 projects nominated were judged by a jury of engineering publication editors on engineering skill demonstrated, contribution to engineering progress, and also for its service to mankind.



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By conducting a careful pre-bid investigation, Cyanamid's explosives engineer offers contractors valuable assistance in estimating hard-rock blasting costs. Next time you bid on a hard-rock job, let an experienced Cyanamid explosives engineer help you *get* and *do* the job!

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Labor Review

Southern California laborers settle wages for two years; rates go up June 15

The Southern California District Council of Laborers and four contractor groups agreed on wages for the next two years. As a result, an estimated 25,000 union members can look forward to an increase of 38 cents an hour in two installments.

Rates will go up 20 cents on June 15 of this year, and another 18 cents May 1, 1961, for all classifications except watchmen.

The hourly rate for construction laborers will be $3.08 as of June 15 for all work. In addition, employers pay 10 cents an hour for health and welfare, and $6 a day for subsistence in designated areas.

All of the basic crafts in southern California are working under long-term contracts, which run until the spring of 1962. The laborers' was the only agreement to reopen on wages this year; other crafts are due for automatic increases of from 20 to 22½ cents an hour.

Automatic increases are set for most crafts next year, too. Only the carpenters have a wage reopening. Operating engineers will get a 20-cent increase in 1961, cement masons will get 19 cents, teamsters will get 21 cents, and the laborers will get the 18 cents agreed upon this year.

The four employer associations involved in the southern California negotiations are the Associated General Contractors, the Home Builders, the Engineering & Grading Contractors Association, and the Building Contractors Association.

Professional engineers object to situs picketing bill; fear loss of rights

The National Society of Professional Engineers has added its name to the growing list of opponents to bills that would sanction common situs picketing in the construction industry. It is NSPE's contention that the rights of engineering and surveying employees in the industry would be jeopardized if Taft-Hartley Act boycott provisions are amended.

The society's views are stated in identical letters to Rep. Howard Smith (D., Va.), chairman of the House Committee on Rules, which now has the Thompson bill; Rep. Graham Barden (D., N. C.), chairman of the House Labor Committee; and Sen. Lister Hill (D., Ala.), chairman of the Senate Labor Committee.

The letters, signed by NSPE executive director Paul H. Robbins, call attention to several instances "in which building trades union have engaged in pressure tactics to organize [engineers and surveyors] into the union, force their replacement on the job by union members, or coerce construction contractors to cease doing business with the engineering and surveying firms."

According to Robbins, "existing provisions of the Taft-Hartley Act are adequate in most instances to prevent undue union pressure upon employees of engineering and surveying firms in the construction industry," but he is afraid that enactment of the situs picketing amendment would end this protection.

U. S. Comptroller General denies government reimbursement in Glen Canyon dispute

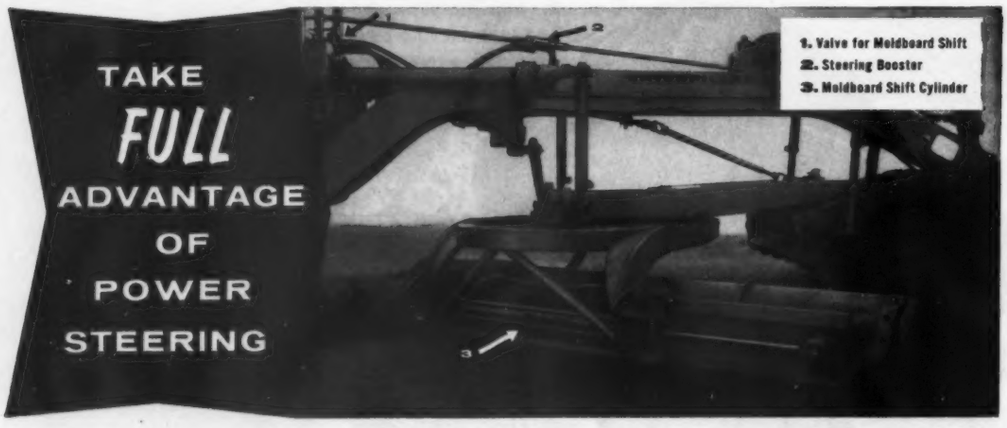
U. S. Comptroller General Joseph Campbell ruled the Bureau of Reclamation not obligated to reimburse the Merritt-Chapman & Scott Corp. for increased labor costs incurred by the contractor in granting a wage scale 50 cents above Arizona rates.

Campbell sees the premium as subsistence payment "in the guise of" a wage increase which the government is not obliged to underwrite.

Local committee of carpenter's union demands Hutcheson's ouster

A rank-and-file committee of the Carpenters Union reportedly is calling for the ouster of the union's international president, Maurice A. Hutcheson. Leader of the group is identified as a member of Chicago Local 58; he is quoted as saying the carpenters' constitution contains no procedure for ousting international union officers.

The most recent copy of the union's constitution, as amended April 1, 1959, suggests otherwise. Among the duties and privileges of the general president is that of suspending any other general officer "in case of charges" against him. If the charges are against the general president, the first general vice president takes over. In either instance, the executive board makes an investigation, and the findings are submitted to the entire membership to determine guilt. The suspension becomes permanent if the accused is found guilty as charged "by a majority vote of all the members of the United Brotherhood voting." The constitution sets no time limit for the executive board's investi-



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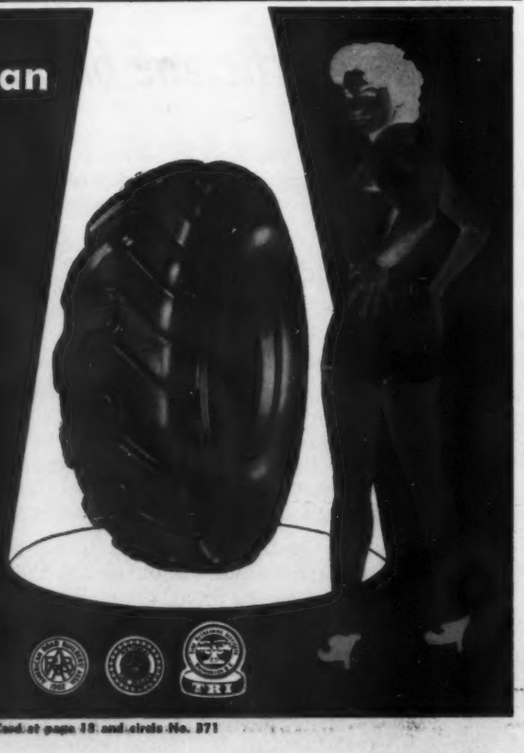
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gation. But the vote by the members is required within 30 days "after the findings are complete."

The report from Chicago also said the Bureau of Labor-Management Reports has begun an investigation of a complaint against Hutcheson by the Chicago committee, and that the Chicagoans also had urged AFL-CIO and its AFL-CIO Ethical Practices Committee to proceed with an investigation and take action on the Hutcheson matter.

Hutcheson, 62, of Indianapolis, recently was convicted of contempt of Congress, following his refusal to answer questions before the Senate rackets investigating committee. He is free on bond, pending sentence by a federal court in Washington.

Half-year strike ended as operating engineers settle in Indianapolis

The first break in a half-year strike by Operating Engineers Local 103 in 33 Indiana counties came in a contract settlement between the local and the Building Contractors Association of Indianapolis.

The new 2-year agreement sent engineers back to work in 13 counties in the Indianapolis area. However, the local had not yet settled with employers in 20 counties represented by the North Central Indiana Contractors Association and the Associated Contractors of Fort Wayne.

The Indianapolis agreement increased hourly rates 5 to 15 cents, effective April 11, bringing the rates to a range of $2.53 to $3.68. A 5-to-18-cent increase was due last month, and a 5-to-17-cent increase is due in May, 1961.

Rates were agreed on early in the negotiations, but the union's demand for an exclusive hiring hall blocked settlement throughout the winter. The association ultimately accepted the hiring hall, but with the modification that the employer may call for any man by name.

One additional change in the agreement reduces from double time to time-and-a-half the pay before or after eight hours and on Saturday for on-site dirt moving and excavation and moving machinery.

The North Central contractors reportedly have agreed to the same terms, but bargaining continued in Fort Wayne.

Three-year contract set for ironworkers in 3-state area

A 3-year, 52½-cent hourly package was agreed upon by Iron Workers' Local 782 and contractors in Illinois, Kentucky, and Tennessee.

The agreement, according to a spokesman for Local 782, is retroactive to January 1, 1960, when the first 10-cents-an-hour increase becomes effective. Wages will go up 10 cents an hour more on July 1, 1960; 15 cents on January 1, 1961; and a final 15 cents an hour January 1, 1962. The new rate is $3.50 an hour, plus 7½ cents for health-welfare. The health-welfare contribution will be upped to 10 cents an hour during the first year of the contract.

At the same time, Iron Workers' Local 46 and contractors in Springfield, Ill., continued to negotiate. Local 46 asked for an immediate 15-cents-an-hour wage increase; 10 cents more on May 1, 1961; and a final 2½ cents on October 1, 1961. The contract would run until March 31, 1962. Employers offered an immediate 15-cents-an-hour raise and another 10 cents on May 1, 1961, with a March 31, 1961, expiration date.

A new agreement covering laborers in Woodford County, Ill., is reported. The one-year settlement increases wages 15 cents, to $2.80 an hour.

Kansas City construction at virtual standstill as 20,000 strike

An estimated 20,000 workmen were idle and about 95 per cent of construction projects in the Kansas City area was at a standstill while several crafts and two employer associations bargained on agreements to replace 3-year contracts that ran out April 1.

The Builders Association of Kansas City had reached settlements with four crafts—teamsters, carpenters, stone masons, and floor layers—but ironworkers and bricklayers were on strike since April 1. At the same time, the Heavy Constructors Association is struck by the four crafts it bargains with—laborers, teamsters, operating engineers, and cement finishers.

Nonwage items were the cause of the problem, according to an employer spokesman. The striking unions want welfare programs, pensions, paid vacations, subcontractor clauses, and numerous other benefits.

The Builders' settlements are based on wage increases of 30 to 37½ cents an hour over three years.

Carpenters get 12½ cents each year; teamsters get 12½ cents in the first and second years, and 10 cents in the third year; stone masons get 12½ cents this year and 10 cents in 1961 and 1962; and floor layers get 10 cents each year. No fringe programs were negotiated. Carpenters will be paid $3.60 an hour this year.

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Exposed-aggregate panels- A NEW VOGUE?

Thin concrete units for interior and exterior use find markets over a wide area of the country

materials



When a contractor ships 2,000 tons of aggregates more than 500 miles from Denver to Salt Lake City to be made into concrete panels and shipped back to Denver, there is something extraordinary about these concrete panels. That something is summed up in the coined word Mo-Sai, which in the Intermountain West pinpoints the craftsmanship of Otto Buehner & Co. of Salt Lake City.

The 1,000-mile round-trip shipment was made for the exterior facing panels of the new Denver Hilton Hotel, the largest single project in the United States using a cast-stone exterior. The attractive brown granite rock that came from the building excavation was processed into intricate exposed-aggregate panels that form the complete outer skin of the 20-story hotel.

The shipment to Denver is a comparatively short haul for Buehner. Some of the more distant projects for which this plant has furnished Mo-Sai panels are Wieboldt's department store in Chicago and the L.D.S. Temple in Los Angeles. The firm also furnished panels for the Fremont Hotel in Las Vegas.

Pioneers in concrete products

Otto Buehner & Co., which is one of the largest and most outstanding North American producers of exposed-aggregate concrete panels, stems from one of the real pioneers in the concrete products industry.

In 1900, Carl F. Buehner left his native Germany, where he had been a mason, and settled in Salt Lake City. Here, he began to make concrete blocks and other concrete products, becoming the first commercial producer of these materials in the Intermountain West. In 1936, his son Otto, who died last year, organized Otto Buehner & Co. Another son, Paul, now operates the business.

The new company went immediately into the production of architectural cast stone, specializing in thin structural panels with exposed aggregates. Buehner & Co. was one of the firms instrumental in the formation of the Mo-Sai Institute in 1940, and the company's products have carried that name since.

Carrying on in the pioneering vein, Otto Buehner & Co. was one of the first in the nation to foster research and study in the field of prestressed concrete. The company now operates one plant whose entire production is precast, prestressed-concrete sections.

Two plants, one in Salt Lake City and one in neighboring Murray, are presently engaged in the cast-stone operation. In the Salt Lake City

This 21000-powered Bucyrus-Erie 54-B and personnel on the barge with it must work in isolated areas for long periods at a time.



"Our new 21000 engine is saving 30% and more on fuel!"

— says spokesman for Sam Carline, Inc.

"We are pleasantly surprised to see how well the 21000 does the job of the larger engine we took out of a 54-B," said Wallace Carline, general manager of Sam Carline, Inc., Berwick, Louisiana. "Then when we found our fuel saving was so great, we were even more sold on it. We have now ordered a second one for another of our Bucyrus 54-B's."

The dragline is mounted on a barge, along with living quarters for the personnel, and operates in back swamps and bayous of Louisiana. Since it must work for long periods in the remotest parts of this country, dependability and a minimum of maintenance are essential. The 21000 has fulfilled every expectation—requiring no attention other than routine maintenance.

If you want performance, fuel economy and dependability like this, let your dealer tell you more about the amazing 21000 and the companion 16000 diesels. Allis-Chalmers, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

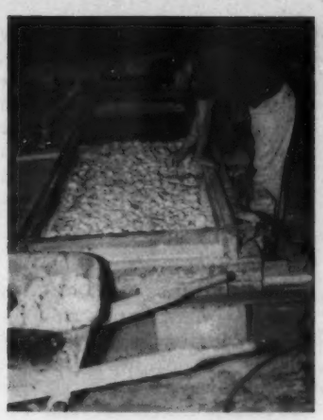
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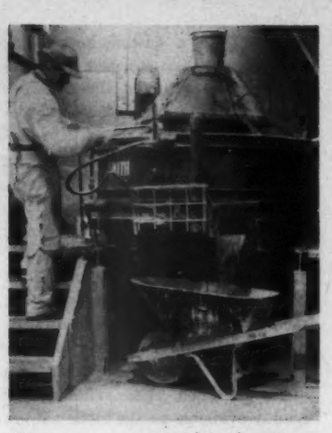
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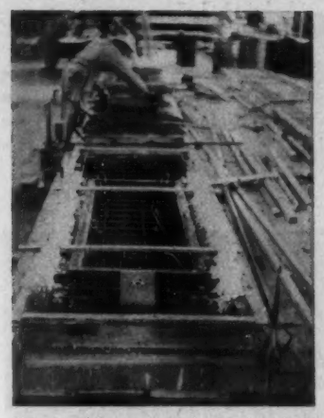
Skilled craftsmen turn out panels for Otto Buehner & Co., Salt Lake City. In the Murray plant, joints are sealed to prevent escape of mortar.



White stones for the exterior facing of a panel are set in a bed of white sand by hand. Reinforced-concrete backing is then cast.



Mixes are proportioned in the mixing room. This Smith turbine mixer is discharging to a wheelbarrow to be brought to forms in the adjacent room.



This panel has a special mix already in place for edge returns. Reinforcing mesh is also in place. In background, a workman places stiff concrete.

plant, polished cast-stone units are produced. The Murray plant, which has no polishing equipment, produces the exterior panels with etched surfaces.

In both plants, the big casting beds are made of reinforced concrete for permanence, rigidity, and stability. The beds are made of very dense concrete finished to exacting tolerances.

Lumber forms on the concrete beds define the exterior shape of the panels and any interior blockouts. When other than flat panels are being produced, elaborate forms are sometimes required. If relatively few pieces are to be cast, these forms are built up of lumber. If the number of pieces to be produced exceeds about 20, a concrete mold is cast to serve as a form.

Placing aggregate

When a form has been set up, the face aggregate is carefully placed by hand in a thin bed of sand spread over the casting bed. If specific designs are to be produced, patterns must be arranged on the beds in reverse and upside down. Several types and colors of aggregates may go into a single panel to achieve the desired architectural effect.

With the face aggregate in place, a very dry mix of concrete, colored to harmonize with the face aggregate, is placed and vibrated. The 4×4-inch No. 3 welded-wire mesh reinforcing is placed over this initial concrete. The remaining concrete backing is then placed, vibrated with special vibrating tampers, and finished with wood floats.

The very dry mix and thorough vibration produce an extremely dense concrete with compressive stresses always in excess of the 7,500 psi specified for Mo-Sai. The finished panels are sometimes steam-cured under tarpaulins.

When the panels are removed from the mold, they are turned face up, and the sand is washed away with a high-pressure jet to expose the face aggregate. Retarders are sometimes used to aid in receding the mortar to expose more of the rock.

Panels that are to have polished surfaces are cast in a similar manner, but the face aggregate is arranged directly on the casting bed without

(*Continued on next page*)



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BETTER RUBBER FROM START TO FINISH

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(Continued from preceding page)

the blanket of sand. When these panels have been cured, the surfaces are first ground smooth on a huge revolving steel disk that uses a special sand as a cutting agent. The surfaces are then polished with successively finer grinding wheels in huge but delicate grinding machines that finish the surfaces to extreme accuracy. The grinding and polishing operations are essentially similar to those used in polishing cut stone.



After special vibrating tampers have vibrated the mix, a wood float is used to finish the back of a panel. Projecting bolts in the panel will be used to attach the unit to a structure. Employees are highly skilled; many have been with the firm more than 10 years.



A high-pressure water jet is used to clean away sand and expose aggregates. When panels are removed from forms, they are placed on edge, covered with tarps, and cured by steam, background. They are stored in this position until they are shipped.



Some Mo-Sai panels are polished. The first step in polishing is grinding the face on a revolving steel disk. Panels are held still while sand and water—agents for polishing—are fed onto the disk. Panels are weighted to get the desired cut.

Skilled craftsmanship

While many thousands of dollars are invested in machines and other facilities, Buehner officials readily admit that the high quality of their products is largely due to the skills of the workmen. These skills are not readily available on the labor market but must be developed in the plant by long periods of training.

Many of the plant craftsmen have been with the Buehner organization for ten years or more. Most of these men have acquired their training in the plant, where the skills are passed along to younger workmen who want to learn and advance.

Variety of projects

While the Denver Hilton Hotel is one of the largest projects using Mo-Sai precast facing, it is conservative in color compared to the gay two-tone red and pink panels that face the Fremont Hotel in Las Vegas. The 28-story First National Bank Building in Denver has a facing made with white marble chips and ground to a smooth finish.

The facing panels for the Wieboldt department store are in a series of diamond shapes in black, white, and gray; black and white aggregates were mixed to produce the gray. The 8×14-foot rectangular panels, cast of lightweight concrete with built-in insulation, were shipped 1,500 miles to the job site.

One of the most outstanding recent projects supplied by Buehner is the new Salt Lake City airport terminal building. The exterior of the termi-

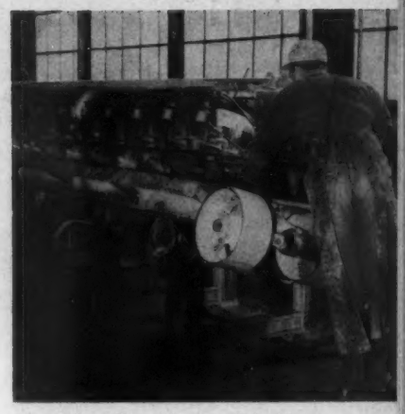
RED, HOT AND STANDARD

nal is faced with panels having a pure white exposed aggregate. Some of these panels, among the largest ever produced, measure 12 feet wide x 27 feet high. These largest panels have 350 square feet of surface area and weigh about 10 tons each.

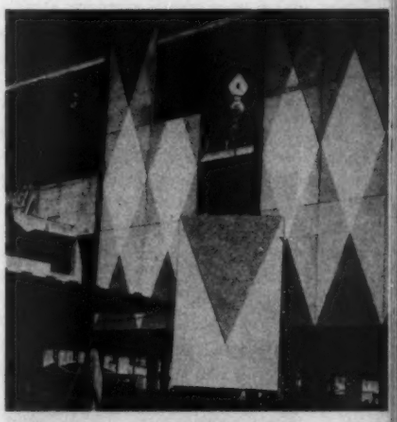
Mo-Sai and the Buehner name are well known throughout the West but not in other areas of the country. This may soon be corrected; a delegation of architects and builders from the New York area recently visited the Buehner plants to learn more about the exposed-aggregate panels and their adaptability in the building industry. THE END



This is another polishing machine. Carborundum wheels in various grits handle the job. Two wheels lie on the floor at the side of the workman. Mo-Sai panels are made in various types of colored aggregate and mortar. Polished units are as serviceable as cut and polished stone.



Edges of small panels are polished in a continuous operation on this machine. They travel under the power of the machine from one end to the other. Finished panels are delivered to sites as far away as Chicago, Los Angeles, Las Vegas, and Denver.



Mo-Sai panels for Wieboldt's department store in Chicago have black, white, and gray stones that form a diamond design when units are in place. The insulated panels are bolted to the steel frame of the building.



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Get all the facts about new PREMIER Diesel Fuel. Call your nearby Standard Oil office. Or write **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**

PREMIER DIESEL FUEL

Here are the 7 big features

1. Anti-rust additive.
2. Balanced volatility—for full power and clean burning.
3. Cetane—for easy starting, good performance.
4. Free flowing—even in cold weather.
5. Low sulfur—less wear, reduced deposits.
6. Lubricates and seals injectors.
7. Distinctive red color.

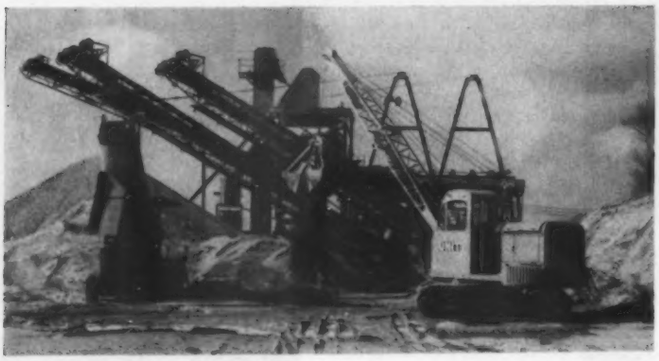
You expect more from STANDARD *and you get it!*

Victor acquires L & B Equipment

■ Victor Equipment Co., San Francisco, Calif., has acquired the L & B Equipment Co., of Berkeley, Calif., in an exchange of stock, it was announced by L. W. Stettner, Victor president. L & B will continue to operate at Berkeley as a wholly-owned subsidiary, but present plans are to market its product line under the Victor name through Victor dealers. Forest Leader and Turner Brashear, Jr., who founded the L & B company in 1957, will continue in management capacities.

Victor manufactures metal cutting and welding equipment, including continuous-coil hardfacing wire, which is used in large quantities by L & B machines. L & B produces machines for the rebuilding of tractor track rollers, idlers, and rails. Its founders developed a method of welding a metal overlay on worn tractor parts.

◀ For more facts, use Request Card at page 18 and circle No. 297



Case history: Two Unit Model 1020 machines play a key part in the operations of the Rensselaer Sand & Gravel Co., at Rensselaer, Ind. Stockpiling and loading out customers' trucks are the primary duties of the machines, which are equipped for clamshell and dragline applications. The company states that maintenance costs have been very low, due to the Unit's one-piece cast gear case enclosing all gears and shafts, which operate in a constant bath of lubricant. This feature prevents sand from damaging any moving parts. The company moves approximately 75,000 tons of sand and gravel per year. For further information write to the **Unit Crane & Shovel Corp.**, Dept. C&E, 6411 W. Burnham St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 113.

Case history

Report concrete vibrator saves $25 per day

Use of a Pacific Mercury Solo concrete vibrator at Puente, California's "City of Industry," has produced labor savings averaging slightly more than $25 a day, according to Ecker Bros., of Pasadena, specialists



The one-man-operated vibrator offers 28,000 vibrations per minute, and bearing wear is eliminated.

in concrete construction. This is based on the fact that only one man is required to operate the PM vibrator.

Maintenance savings, states the company, average at least $40 every 100 hours of use, because the PM Solo has no bearings to wear out or to be replaced.

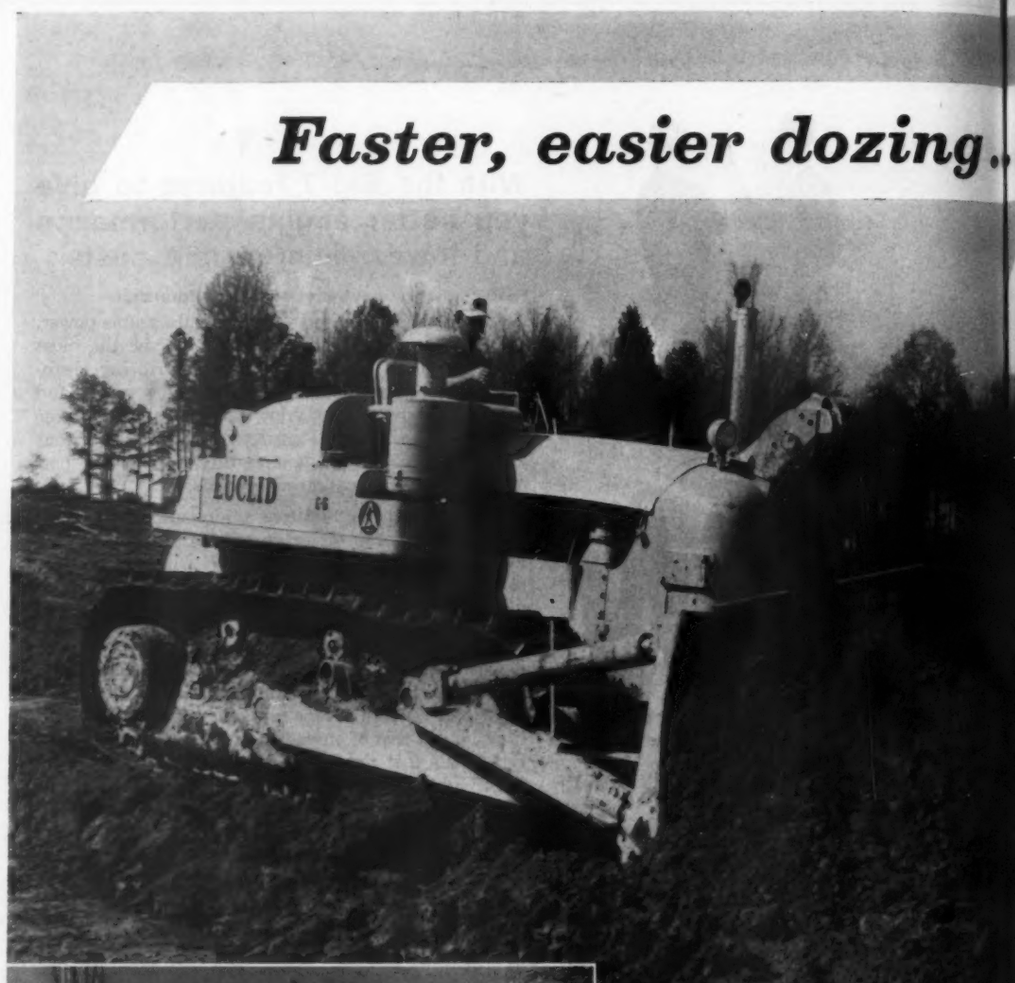
This concrete vibrator has the motor in the head and operates on ultra-high frequency—28,000 vibrations per minute.

For further information write to Pacific Mercury, Marketing Division, Dept. C&E, 8345 Hayvenhurst Ave., Sepulveda, Calif., or use the Request Card at page 18. Circle No. 137.

Soiltest manager tours Middle East

■ John R. Davies, export director of Soiltest International, a subsidiary of Soiltest, Inc., Chicago, recently visited company representatives in Greece, Turkey, Saudi Arabia, Kuwait, Iran, Iraq, Cyprus, and Jordan. His 5-week tour follows a similar trip to Soiltest representatives in 17 countries of Africa.

Faster, easier dozing, an





Faster dozing because you change speed range or direction with a flick of the wrist —no loss of power or momentum—no gear shift guesswork or clutching delay—save productive time on every cycle.

Full-power shift . . . fast-as-a-fox maneuverability

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

Firestone develops tire to transport gasoline

■ When the U. S. Army Transportation Research Command called for a tire that could transport fuel anywhere in the world, The Firestone Tire & Rubber Co., Akron, Ohio, came up with a rolling fluid transporter tire that can be inflated with 521 gallons of fluid.

Two of the giant tires can be mounted on an axle and hitched by a tow bar to the back of a truck. A single truck can pull a train of five of these trailers—or a load of more than 5,000 gallons of fuel. The tires are designed to be parachuted into remote areas, or pushed out of a boat and towed to shore by any amphibious vehicle.

Although Army specifications call only for the tire to be towed over hard, level terrain at speeds up to 45 mph in single operations and 20 mph in a train of five trailers, Firestone engineers hope to pull a train of five trailers at 45 mph. The tire is now undergoing exhaustive tests.



During work on Interstate 70 in Kansas, Harry Henery, Inc., realized a cost saving of 50 per cent, plus a doubled rate of production with an Ulrich Model T-40 shoulder spreader. In addition, the finished asphalt shoulder was said to be more satisfactory to the engineers on the job.

Case history

Spreader doubles output, halves shoulder costs

Switching to an Ulrich T-40 shoulder spreader doubled the daily output and halved costs for Harry Henery, Inc., of Ottawa, Kans.

The Kansas Interstate 70 job called for four 9-inch asphalt shoulders, two 6-foot inside shoulders and two 12-foot ones outside. Using standard motor-grader blading gave Henery a mile-a-day average before the Ulrich machine was added to the job. With the T-40, production jumped to two miles a day.

On the job, Henery's 15-yard trucks dump into the T-40 hopper while on the move. Operated in first gear, the motor grader-shoulder spreader combination emptied a 10 to 12-cubic-yard load in an average of about 30 seconds.

Even though the rig produced 100 per cent more than previous methods, it was estimated that the Ulrich shoulder spreader was working at only about one-third its full capacity, and that up to 30 large trucks could easily operate on the job.

For further information write to the Ulrich Mfg. Co., Dept. C&E, Roanoke, Ill., or use the Request Card at page 18. Circle No. 103.

Symons rental division has new headquarters

■ The rental division of Symons Clamp & Mfg. Co., Chicago, Ill., is building a new office-warehouse headquarters in which to store and lease its prefabricated concrete forming equipment. The building, in the Chicago suburb of Des Plaines, Ill., is located on Touhy Avenue north of O'Hare Airport and will provide greater accessibility and space than the present Chicago operation. Completion is scheduled for the end of this month.

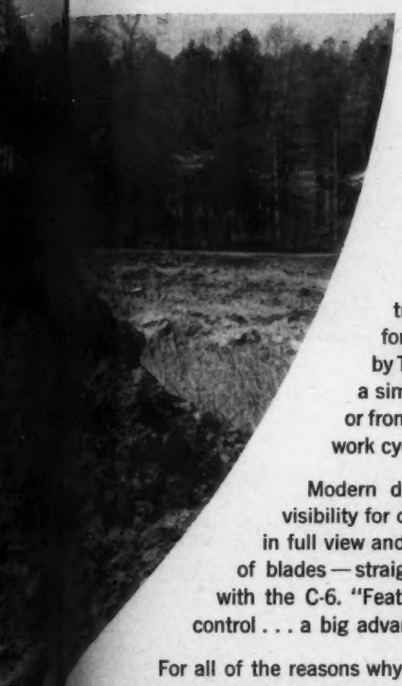
Air Reduction directors

■ Three new members were elected to the board of directors of Air Reduction Co., Inc., New York, N. Y. They are Dr. Richard G. Folsom, president of Rensselaer Polytechnic Institute, August J. Thoma, vice president of Air Reduction, and John T. Dorrance, Jr., assistant to the president and a director of Campbell Soup Co.

◀ For more facts, use Request Card at page 18 and circle No. 298

...g, and overall work-ability

put the "EUC" C-6 in a class by itself!



No matter what your dozing requirements may be—from small grading work for land improvement, plant sites or secondary road construction to the big yardage projects—the new Model C-6 Euclid Crawler offers the best return on your equipment investment.

The C-6 has proved its ability to "doze circles" around other tractors in the 200 h.p. class on job after job. One of the reasons for this outstanding performance is the full-power shift provided by Torqmatic Drive. There's no time lost in clutching and shifting... a simple flick of the wrist changes from one speed range to another, or from forward to reverse and back again. You save seconds on every work cycle . . . keep power matched to the load and job conditions.

Modern design, with rear-mounted radiator, gives the operator better visibility for dozing. The blade is close to the front of the tractor where it is in full view and provides good balance and stability. There is a complete line of blades—straight, angle and "U"—engineered for top dozing performance with the C-6. "Feathered steering" results in smooth turning and positive track control . . . a big advantage on difficult slope work.

For all of the reasons why the C-6 has more work-ability on dozing . . . and other crawler jobs, too . . . check with your Euclid dealer for performance facts and figures.

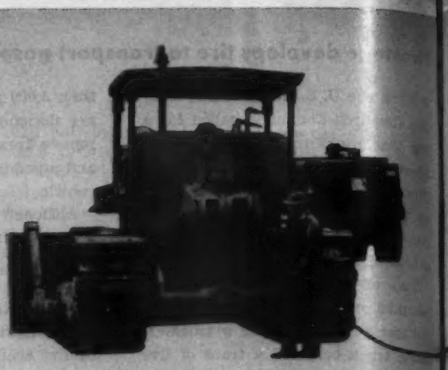
EUCLID DIVISION OF GENERAL MOTORS • CLEVELAND 17, OHIO

Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland



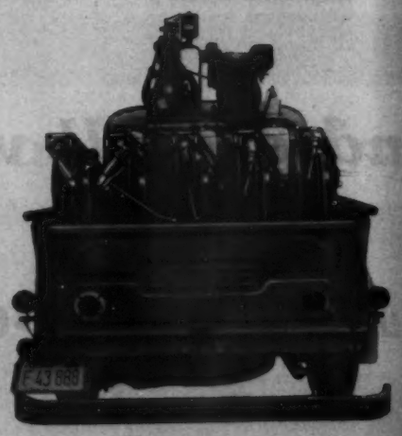
Good balance with heavy dozer attachments... rear-mounted radiator permits close mounting of straight, angle or "U" blade at front and provides excellent visibility for operator. Quick shift permits "rocking" the tractor to get under big boulders, stumps, etc. Power, speed and fast maneuverability, combined with a rugged undercarriage that stands up under heaviest service, make the C-6 a top performer.

Torqmatic Drive...211 net h.p....easy service accessability

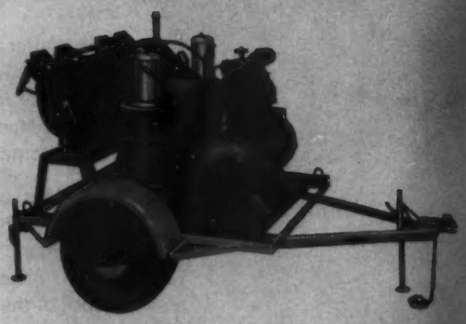


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Clams and cranes, dozers and cats often "act up" when pressure is on and lubrication is off schedule. Down-time is doubly costly when the day is needed to get under the wire.

No matter how little or how much equipment is in the field, Lincoln engineers know what it takes to custom-design the portable lube rig that can keep the equipment on the job. It might be a two-wheel trailer with drum pump and retracting hose. A more extensive grouping would be "packaged" where the need is for a wider range of lubricants and a fast way to apply them. The "package" is often designed to fit a truck or trailer already in use.



Lincoln LUBROVANS (custom planned around 400-lb. drum size pumps) and Lincoln LUBMOBILES (assemblies scaled to 120-lb. drum size units) are matched to the exact equipment you have on the job.

For more details write for Catalog No. 32 and Engineering Manual No. 33.

*Trade name registered





LINCOLN ENGINEERING COMPANY

Division of The McNeil Machine and Engineering Co.

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For more facts, use Request Card at page 18 and circle No. 299

Brick veneer —from a plaster shop

Panels are used to finish buildings in Freedomland, a huge outdoor entertainment center in New York City



Brick veneer for buildings in Freedomland, U. S. A., an 80-acre entertainment center in New York City, is turned out in panels like this from a mixture of Hydro-Stone and plaster of Paris.

materials

Simulated brick veneer—made of Hydro-Stone, plaster of Paris, and water—was turned out in panels for use on buildings in a unique re-creation of cities in the United States for Freedomland, U. S. A. This development is transforming 80 acres of a 205-acre Bronx swampland tract into a scaled-down reproduction of the shape and topography of the United States.

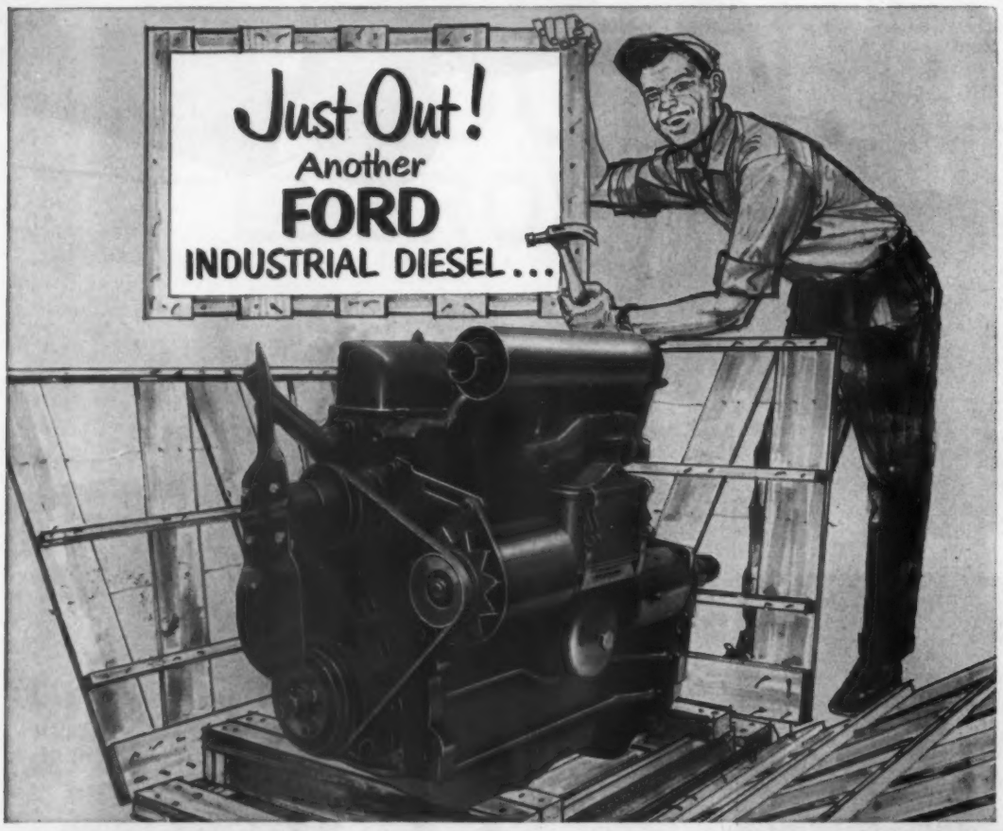
Representing an investment of over $65 million, Freedomland is scheduled to open this month. Its physical layout follows the contours of the United States. Its six major areas include a re-creation of "Little Old New York," a futuristic Satellite City, Chicago during the late 1800's, a St. Louis stockade, the Santa Fe Trail and an Iowa farm, New Orleans, and San Francisco.

Built by a joint venture of Turner Construction Co., New York, N. Y., and Aberthaw Construction Co., Boston, the project required a work force of over 1,500 men during peak operations last month. Of this total, over 500 were carpenters needed to fabricate and erect the more than 100 buildings scattered throughout the site.

One of the largest and best equipped mills ever set up for a construction project—a shop equipped with all types of lathes, bandsaws, sanders, and drills—turned out all the mill work for the job. Items such as doors, posts, gables, and window sashes of all shapes and styles were produced, numbered, and shipped to the proper work area.



A rubberized mold is one of many used to produce roof shingles for the buildings. The molds are supported by a plaster of Paris backing that rests on timber horses.



FORD PRESENTS THE 172 CUBIC INCH DIESEL FOUR!

(and it's interchangeable with the 172-cu. in. gasoline engine)



To meet the growing demand for diesel power, Ford now offers a choice of three economical diesels—the highly efficient 172-, 220- and 330-cubic inch models.

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What's more, Ford's 172 Diesel and 172 Gasoline engines are *interchangeable* in your equipment. Many *parts*, too, are interchangeable between these engines. And low-cost Ford parts and service are always available at any nearby Ford Power or Tractor Dealer.

For greater productivity and more profit in the long run, it will pay you to check the 172 model or other Ford Diesels at your Ford Industrial Products Headquarters.

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ENGINE SERIES		172 FOUR DIESEL	220 FOUR DIESEL	330 SIX DIESEL
Basic Model		DD	X	Y
Type		4-Cyl. O.H. Valve	4-Cyl. Diesel	6-Cyl. Diesel
Bore and Stroke—Inches		3.9 x 3.6	3.94 x 4.52	3.94 x 4.52
Displacement—Cubic Inches		172	220	330
Brake Horsepower	Dynamometer	59 @ 2400	60 @ 2250	96 @ 2250
	80% Dyn. BHP	47 @ 2400	48 @ 2250	77 @ 2250
Torque	Dynamometer	140# @ 1200	151# @ 1600	236# @ 1600
	80% Dyn. BHP	112# @ 1200	121# @ 1600	189# @ 1600
Compression Ratio		16.5 to 1	16 to 1	16 to 1

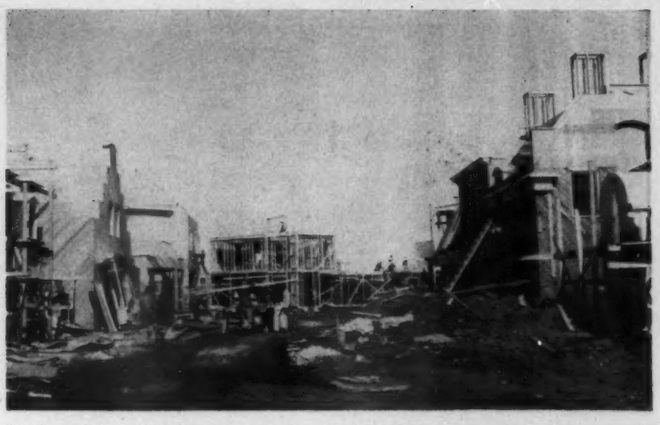
INDUSTRIAL ENGINE DEPARTMENT, FORD DIVISION, FORD MOTOR CO., P.O. BOX 598, DEARBORN, MICH.

West of Rockies write to: → FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 6787, LOS ANGELES 22, CALIF.
→ FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 1666, RICHMOND, CALIF.

For more facts, use Request Card at page 18 and circle No. 300



The Freedomland project boasted a big, well equipped mill that turned out the numerous odd shapes for various architectural building styles that were required.



"Little Old New York" begins to shape up; everything down to window sashes and molding was fabricated in the mill at the site.

Full-size carpenter details were transferred from plans to heavy cardboard sheets. These were then turned over to the carpenters in the mill.

Plaster shop

The buildings called for the manufacturing of over 35,000 square feet of simulated brick veneer on the job. This brick facing, which was simply nailed to the wood-frame buildings, was turned out in about ⅝-inch-thick panels that covered an area of some 9½ square feet. Three different brick textures were manufactured in the plaster shop along with 5,000 square feet of roof-shingle panels.

The brick panels were turned out by pouring a mixture of 3 parts U. S. Gypsum Hydro-Stone, one part plaster of Paris, and about 25 per cent water by volume into plastic molds formed on the job. Rubberized molds were formed by pouring liquefied Multi-Cast or Plasti-Flex compounds, manufactured, respectively, by Promanco Industries, Hollywood, Calif., and Cal-Resin, Los Angeles, Calif., over a panel of authentic brick actually set with cement mortar. Three different brick types were used to obtain the desired molds.

The Multi-Cast and Plasti-Flex molding compounds, shipped to the job in pellets, were liquefied by heating to 360 degrees F before the pour was made. A plaster of Paris containment mold was previously formed to fit over the brick panel and hold the flowing molding compound.

Vents were formed through the plaster of Paris mold to allow the entrapped air between the brick panel and the containment mold to escape as the Multi-Cast or Plasti-Flex was being poured through the openings in the mold.

Base poured

After the molding compound hardened to its rubberized state, the containment mold was removed, the mold trimmed along its edges, and a plaster of Paris backing poured over it. This provided a sturdy support for the flexible casting mold that, when stripped from its brick panel, was fitted onto the plaster of Paris backing.

The mold supports were placed on timber horses to keep the many casting molds used at a convenient working level.

The Hydro-Stone and plaster of Paris mix was tinted with a brown pigment while being prepared for the

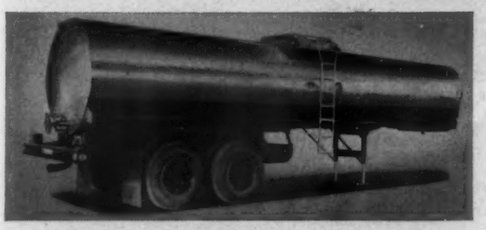
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For more facts, use coupon or Request Card at page 18 and circle No. 301



Typical of the more than 100 buildings in the project is this group, which, along with the "Chinatown" section and the "Barbary Coast," will form "San Francisco."

(Continued from preceding page)

molds. Even though the brick panels are being painted after installation, the pigment keeps any cracks or chips in the exterior panels from being too obvious.

Wood fibers were embedded in the mix as it was placed into the Multi-Cast or Plasti-Flex molds to act as a reinforcing and binding material. After the mold was filled, more wood fibers were placed as a cover over the mold. Then the mix was allowed to set and develop a compressive strength of 11,000 psi. This strength assures long-lasting exteriors for the many buildings, which have been designed to last about 50 years.

After the mix had set, all the excess wood fibers were removed and the panel was easily stripped; the flexible mold was simply lifted and the panel pulled away from it.

The mold can be used indefinitely and can later be melted down to form another mold. It also does not require any form oil to prevent the casting from sticking. This was important because all the simulated brick panels had to be primed and painted with vinyl paint, and this precluded the use of any type of oils. The brick panels are fastened to the frame buildings with galvanized nails; pointing up between panels was done with mortar.

Grading site

Over a million yards of earth was moved by a subcontractor to level and shape the site. Outside of the 80 acres that simulate the topography of the United States, other areas were shaped to provide parking facilities for over 15,000 automobiles. About two-thirds of the 80 acres required excavation, and the material was used to make up the fill for the western third of the "United States."

All buildings in this fill area were supported on piling. The buildings in the cut areas required only spread footings. Areas such as Satellite City, which have concrete and steel in their structures, are on piling. Piling was also used for all the railroad trestles.

Over 80,000 cubic yards of material was removed by dragline to form the five Great Lakes and other waterways. This excavation, plus an additional 250,000 yards, was needed to form the "Rocky Mountains," railroad embankments for 5,500 linear feet of narrow-gage rail cars, and berms for separating the six major historical areas of the park.

Since the "Great Lakes" will have to maintain a minimum depth of water to accommodate a stern-



Built by the pioneer in the mounted ripper field, all-new ATECO Rock Rippers for 1960 are the masterpieces of 40 years' experience.

ATECO rippers on thousands of jobs throughout the U.S. and 43 foreign countries have proved ATECO's superior performance—licking tough jobs other rippers can't touch, staying on the job to keep scraper fleets rolling.

Today's ATECO ripper offers more than ever—bigger cylinders and rods, greater use of high-strength heat treated alloy steels, "beefed up" design at every point to give extra strength and dependability.

Only ATECO rippers offer the advantages of really big equipment—better performance from the start, superior performance with less downtime through the years. Why settle for less? There are 36 ATECO models available to match all popular big crawlers. Write or wire now for complete information—please address Dept. 20.

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For more facts, use Request Card at page 18 and circle No. 302



LESCHEN WIRE PORTER ROPE DIVISION
H. K. PORTER COMPANY, INC.
For more facts, circle No. 303

wheeler, the lakes have been lined with Carey Careymats to make them watertight. The ground-water level throughout the "Great Lakes" area is about 1 to 2 feet below the bottom of the excavation. Without the lining, seepage into the ground would make it impossible to maintain the desired water level.

The 3-foot-wide by 14-foot-long Careymats were laid directly on the smoothed and raked lake bottoms and side slopes. The ½-inch-thick asphalt-impregnated mats were laid side by side without any overlapping.

Both sides of the resulting joints were then mopped with melted Carey roofing asphalt and sealed by 6-inch-wide strips of the lining material over the joints. As a section of one of the lakes was completely lined and sealed, it was sandbagged off and filled with water. The weight of the water is sufficient to hold down the lining and, since the ground-water level is below the excavation, there will be no problems with hydrostatic uplift pressures.

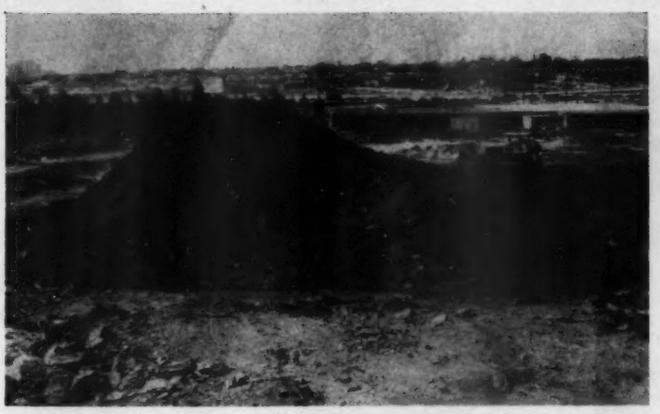
Along the center line of the "Great Lakes" is a 10-inch wide-flange steel beam, placed with flanges vertical, which will act as a guide for the stern-wheeler. This guide rail has been bolted to a 3-foot-thick concrete footing that is flush with the Careymat lining of the lakes.

Freedomland is designed to entertain a peak daily attendance of 90,000 persons. Roadways, walkways, shade areas, rain shelters, and comfort stations can accommodate 32,000 persons at any given time. Restaurants and snack bars from one "coast" to the other, many serving regional foods, will be able to serve 35,000 persons an hour. About 8 miles of navigable rivers, lakes, and streams; half a million yards of paving for the parking areas; and about 10,000 replanted trees are included in the job.

Personnel

Edward O'Brien is the project manager for the army of men on the job.

The project is owned by the International Recreation Corp., New York, N. Y.—a publicly owned operation, of which M. T. Raynor is president. Marco Engineering Co., Los Angeles, Calif., is the designer-builder of Freedomland. The company is headed by C. V. Wood, Jr., who was general manager of Disneyland in Anaheim, Calif., until 1956, when he formed Marco Engineering. THE END

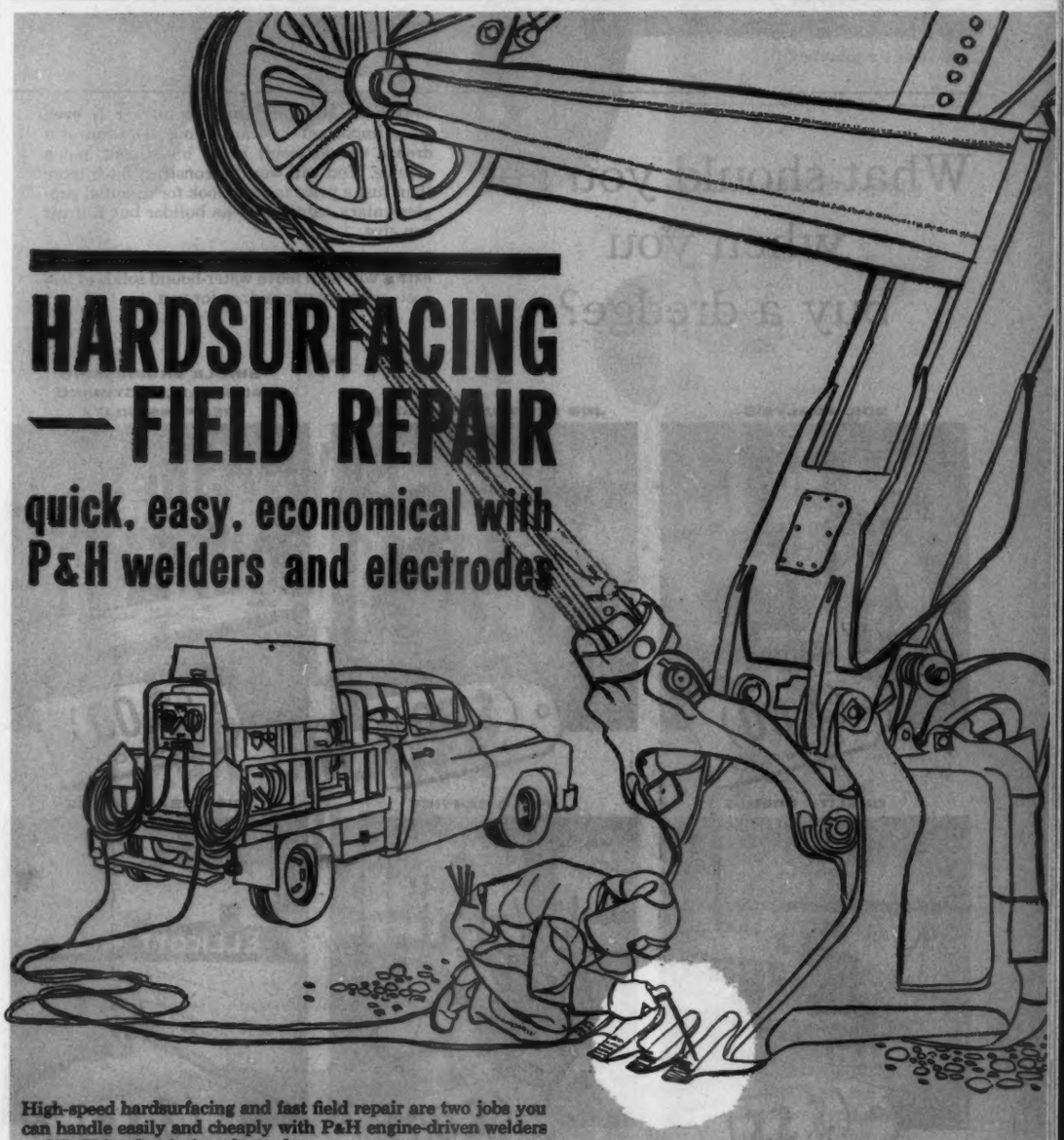


A Cat D8 tractor-dozer works at building up the "Rocky Mountains." Over 250,000 yards of borrow was obtained from local contractors who used the site as a spoil area. Some 80,000 yards of excavation was done for the "Great Lakes."

New P&H district, manager in Denver

■ Harnischfeger Corp., Milwaukee, Wis., has established a new sales district in Denver to handle P&H construction and mining equipment. Dennis Patrick Shanahan, formerly sales representative in Baltimore, has been made district manager of the new area, covering Colorado, Utah, New Mexico, Arizona, Wyoming, and the panhandle section of Texas.

For more facts, use Request Card ▶ at page 18 and circle No. 304



HARDSURFACING — FIELD REPAIR

quick, easy, economical with P&H welders and electrodes

High-speed hardsurfacing and fast field repair are two jobs you can handle easily and cheaply with P&H engine-driven welders and P&H hardsurfacing electrodes.

The sturdy wheel- or skid-mounted welders can go anywhere in the field — take plenty of hard knocks — and still do a bang-up job with big, high-deposit rods. P&H machines are powered by field-proved gas or diesel engines famed for their economy. They not only have a miser's grip on the fuel line, but they are more rugged and easier to service.

P&H hardsurfacing electrodes can be used to prevent wear and to prolong the service life on valuable equipment. What's more, hardsurfaced parts will in most cases outlast the original parts by two to twenty-five times!

Investigate both. Write for Bulletin W-158 which describes the welders — and Bulletin R-27 for information on the hardsurfacing electrodes.

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P&H welding equipment is manufactured and sold in Canada by REGENT EQUIPMENT MANUFACTURING CO., LTD., 455 King St. West • Toronto, Ontario, Canada.

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EPOXIES—

The new compounds are gaining wide acceptance for field use

Epoxy compounds—for joining, sealing, bonding, patching, and coating—are marketed as 2-component products that have to be mixed to start a chemical reaction. Mixing is done with an electric-drill mixing-paddle attachment. Pot life, influenced by temperature and the size of the container, generally ranges from 45 to 90 minutes at 70 degrees F.

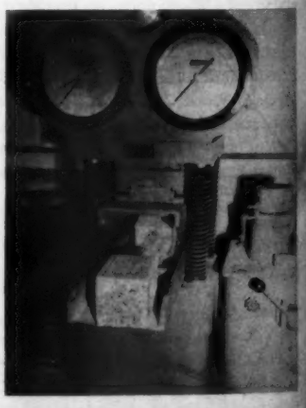
Relatively new construction materials—epoxy-resin compounds—are gaining more acceptance among engineers and contractors as they learn about properties and applications of many of the compounds. They provide high bond; excellent corrosion resistance; and compatibility to concrete, steel, mortar, limestone, marble, and other construction materials.

Because of their toughness, adhesive qualities, and resistance to temperature and corrosion, the various epoxy compounds can be used to join and seal, bond and patch, and coat many materials.

Chemical characteristics

The epoxy-resin molecule is a long chain molecule, terminating at each end with a reactive epoxide group. By reacting various curing agents through these epoxide groups, cross-linking of the molecules is accomplished. The cured resins, being cross-linked, are thermosetting; they will not melt upon heating. Cross-linking is carried out in three dimensions, and the resulting molecule is closely packed, stable, and durable. Reactive flexibilizers and diluents may be added to the formulations to impart desired characteristics. Because of the specific molecular structure, with its inherently compact linkage, epoxies are highly stable and develop the tough adhesive qualities that make them a unique and useful construction material.

The U. S. Army Corps of Engineers, the Air Force, and state highway de-



A bonded beam that has been broken again shows clearly that the break did not occur through the epoxy bonding material. The second break occurred in the same vicinity as the first because of the maximum moment developed at this point and the irregular fit of the segments that had been broken.

What should you get when you buy a dredge?

Important question! But the answer is even more important – because your selection of a dredge should result in an investment, not a gamble. You will want to consider much more than just a price tag and look for essential supplementary values that no builder but Ellicott can give.

In terms of profitable dredge operations, Ellicott extras will help move water-bound solids at less cost—with greater savings for you.

SOIL ANALYSIS



JOB RECOMMENDATIONS



SINGLE ENGINEERING AND MANUFACTURING RESPONSIBILITY



QUALITY DREDGE



FIELD SERVICE



BIG RESALE VALUE



Marking Our 75th Year

Come to Ellicott first for real evaluation of the factors you must consider—in your own interest—to insure a sound investment in the dredge best suited to your needs. Write to Ellicott Machine Corporation, 1609 Bush Street, Baltimore 30, Md.

ELLICOTT

ELLICOTT DREDGES

ELLICOTT MACHINE CORPORATION, Baltimore 30, Maryland, U.S.A.; Ellicott-Brandt, Inc., Baltimore, Maryland; Ellicott Fabricators, Inc., Baltimore, Md.; McConway & Torley Corp., Pittsburgh, Pa.; Timberland-Ellicott, Limited, Woodstock, Ontario, Canada; Dragues Ellicott France, Paris, France; Dragas Ellicott do Brasil Ltda., Rio de Janeiro, Brazil; Ellicott de Mexico, Mexico City, Mexico.

Successors to the floating dredge business of the Bucyrus-Erie Company and the American Steel Dredge Co. Complete engineering, design and construction service.

For more facts, use Request Card at page 18 and circle No. 305

Now, you can drastically cut your trucking costs thanks to GMC's BIG BREAKTHROUGH in engine, chassis and cab engineering. We urge you to compare GMC's genuine truck value . . . feature for feature . . . dollar for dollar. Check with your nearby GMC Dealer listed in the Yellow Pages for actual proof.





MEN WHO KNOW TRUCK COSTS ARE BUYING GMCs FOR GREATER TON-MILE PROFITS!



you can drastically cut
trucking costs thanks to
MC's BIG BREAKTHROUGH in
gine, chassis and cab engineer-
. We urge you to compare
C's genuine truck value . . .
ature for feature . . . dollar for
llar. Check with your nearby
C Dealer listed in the Yellow
ges for actual proof.



New, distinguished GMC Conventionals are smashing sales records everywhere. And no wonder, look at the extra value and uncompromising ruggedness you get in new GMC pickups. Bigger, stronger cabs. Easier-handling, smoother-riding trucks. Road-tried, test-proved, exclusive V-6 power for lasting, low-cost performance. From 34 combinations, you can get the pickup you actually want and need.



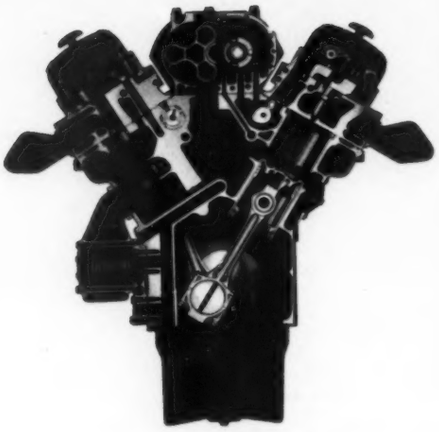
Superior performance, big payloads and low-budget operation are the reasons new GMC Ninety-Inchers are fast becoming contractors' favorites. Power is the exclusive, extended-life V-6 or Twin-Six gas engine, or today's modern diesels—6V-71 Series. A demonstration on your toughest job will be convincing proof.





Join the contractors that are profiting from the many advanced features of the new GMC steel tilt-cabs. BBC is only 72 inches and axle set-back 52 inches – the preferred dimensions to haul more weight, more volume . . . more profitable payloads. You also get superior performance, extremely short turning and big safety vision. Choice of V-6, Twin-Six gas power or V-6 diesels in models from 19,500 lbs. GVW to 76,800 lbs. GCW.





MORE RESPONSIVE, SMOOTHER POWER! NEW GMC V-6 DIESELS

Contractors "working by the clock" praise the instant throttle response and steadier flow of power from GMC's 2-cycle design. You get power on *every* downstroke. There are no wasted strokes or power lags. This work-proved 71 Series gives you more power per cubic inch displacement, more power per pound and more power per dollar!

CHOOSE FROM THESE EFFICIENT, FUEL-SAVING DIESELS		
Model	Max. Torque	Max. Horsepower
6V-71	577 @ 1200	189 @ 1800 210 @ 2100*

*No extra cost



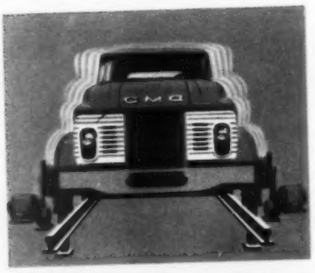
MOST F YOU CA

Exclusive GMC owners the gre standard gas e Maximum gov rpm. Low-stres tends engine li

NEW TWI	
Model	
702	6

Full, rigid crank support! Notic full 3-inch exte GMC skirt for crankshaft sup New compact d extra-strong ribbing and stag cylinders all inc strength and rig decrease costly and failures.

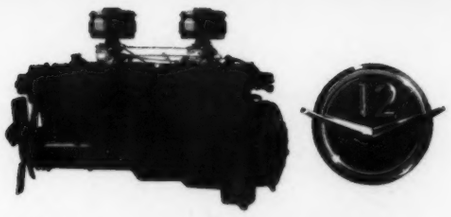
FEATURE FOR FEATURE, DOLL



Built really rugged for extra life! Tests prove—double-wall cab construction, new rubber-bushed 3-point mountings, new extra-heavy reinforcements throughout give new GMC cabs amazing long life, make them ride safer, more comfortably.



Shorter turns and easier steering! New, wider track reduces turning circle as much as 15 feet and increases road stability. Improved recirculating ball steering gears cut steering effort.





MOST PULLING POWER YOU CAN GET! TWIN-SIX

Exclusive GMC Twin-Six engines are giving truck owners the greatest load-moving power of any standard gas engine. This is lasting power, too. Maximum governed engine speed is only 2400 rpm. Low-stress, easy-stroking speed greatly extends engine life and reduces operating costs.

NEW TWIN-SIX FOR PROFIT-PERFORMANCE ON ALL HEAVY HAULS		
Model	Gross Torque Range	Max. Horsepower
702	625-630 @ 1400-2100	275 @ 2400

THERE'S A GMC V-6 ENGINE	
Model	Gross Torque Range
305A	258-260 @ 1400-2200
305B	264-266 @ 1100-2000
305C	268-270 @ 1200-2100
351	308-312 @ 1400-2400
401	375-377 @ 1200-2000

Full, rigid crankshaft support! Notice the full 3-inch extended GMC skirt for rigid crankshaft support. New compact design, extra-strong inner ribbing and staggered cylinders all increase strength and rigidity, decrease costly wear and failures.





DOLLAR FOR DOLLAR, NEW GMC



asier steer- ack reduces ch as 15 feet stability. Im- g ball steer- g effort.



More safe stops! Bigger lining areas, new Centrifuse brake drums extend brake life, make driving safer with surer stops.



GMC Truck



NEW EXTENDED-LIFE V-6 ENGINES AVAILABLE ONLY IN GMC TRUCKS

Tough, accurate tests show new GMC V-6 engines—with proper maintenance and application—have a life potential of up to 200,000 miles without a major overhaul.

High output at low rpm gives you the torque to get loads moving and the horsepower to maintain top legal road speeds.

THERE'S A GMC V-6 ENGINE FOR EVERY JOB		
Model	Gross Torque Range	Max. Horsepower
305A	258-260 @ 1400-2200	150 @ 3600
305B	264-266 @ 1100-2000	150 @ 3600
305C	268-270 @ 1200-2100	165 @ 3800
351	308-312 @ 1400-2400	180 @ 3400
401	375-377 @ 1200-2000	205 @ 3200





New, easy servicing! Comparisons of factory-authorized flat-rate charges indicate that routine maintenance, even major overhauls on the V-6, take less time than on comparable-size competitive engines.



Positive acting, longer lasting valves. Both intake and exhaust valves in the new V-6s are extra large and durable. You get big valve heads; large, short stiff stems; positive rotators; integral valve guides . . . everything for better sealing, less wear, freer breathing and cooler operation.

Five brackets solidly hold rocker shafts in exact location. Aluminum material expands to maintain correct valve-to-rocker clearance at all operating temperatures.

Short, rigid push rods are practically deflection-free.

High-mounted camshaft has positive lubrication even at cold starts, to protect lobes and lifters from galling.

NEW GMCs ARE YOUR BEST TRUCK VALUE!



Softer ride . . . simpler handling! New GMCs with independent front suspension reduce wheel shimmy and tramp. Ball joints cut friction for easier steering. New maintenance-free torsion bars have variable rate to absorb shocks and jolts.

Stronger chassis! New design frames are up to 35% stronger . . . extra-tough to take the most severe construction hauling.

Longer spring life! New, standard 3-inch-wide variable rate springs only support weight. Radius rod leaf transmits all torque and braking forces.

GMC
GENERAL MOTORS CORPORATION
TRUCK

From ½-ton to 60-ton . . . General Motors leads the way

GMC Truck & Coach—a General Motors Division—Pontiac, Michigan.







A calking gun is used in the lab to demonstrate the placement of sealer for a vertical joint. The base of the joint is taped to prevent the sealer from bonding to the base of the joint. This allows for contraction and expansion without stresses being set up.

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Field applications

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The mixing of the materials must be thorough to assure the complete chemical reaction between the resin base and catalyst. A paint-mixing paddle, attached to an electric drill and with a slow speed of 400 to 600 rpm, is recommended. The paddle should agitate the two components not only laterally but also from top to bottom of the container. If the components are of different colors, streaks in the blend will indicate incomplete mixing.

Epoxy's many uses

Many of the epoxy compounds on the market, because of the chemical qualities of the base and catalyst components, have specific field applications. A broad classification of epoxy products by their uses shows the great adaptability of the material. They are used as bonding compounds, patching compounds, surface coatings, joint sealers, crack sealers, and protective linings. The completely reacted compounds are resistant to water, gasoline, oil, organic solvents, alkalies, sewage, sulfates, and most acids.

Specifically, the bonding compounds can be used to bond or join such structural materials as concrete, wood, steel, glass, and ceramics, in any combination. It can bond plastic concrete or mortar to hardened concrete slabs for pavements or slab toppings.

The patching epoxies are compounded for patching concrete pavements and structural concrete, including prestressed-concrete.

Epoxy surfacing compounds have been developed for surfacing roadway pavements. They have been designed to prevent damage from freezing, thawing, solvents, and de-icing chemicals, and to provide a skid-resistant wearing surface in critical areas, such as bridge decks, toll areas, curves, intersections, and hills.

Joint-sealer epoxy compounds will provide a flexible, water-and-air-tight seal between concrete, steel, aluminum, glass, ceramics, or other structural materials. They can be made for vertical and overhead, as well as horizontal, construction joints. Many of these joint sealers are elastomers that will resist but not prevent deformation, and will recover their original shape after de-

(Continued on page 84)



AFETY + COMFORT

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Jackson Products

31739 Mound Road, Warren, Michigan

Sold Everywhere by Better Welding Supply and Safety Products Distributors

Add to the safety of your present Jackson hats and caps (fiber glass and aluminum) by installing this new, all-plastic headgear, part 83. Simply pull up on the metal hangers that are riveted to the shell, slip on the slotted cradle straps, then push hangers down. Once installed, the all-plastic headgear will prove very durable. However . . .



if only the new soft-lined leatherette sweatband needs replacing, you only need part 84, above.



To replace part 84, pull it loose from the T-straps by hand and fasten the new part by snapping the studs of the T-straps into the desired holes. No tools needed.



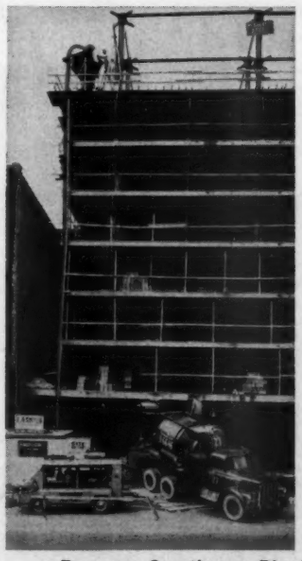
Jackson fiber glass and aluminum safety hats and caps pass all known government and industry requirements however adjusted

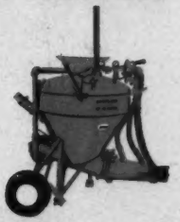
The Most Economical Way to Handle Concrete

THE "AIR EXTRUSION" METHOD

with AIRPLACO

CONCRETE PLACERS





ALL OF THESE JOBS

• Open Pours • Hard-to-Get-to-Pours • Tunnel Linings • Pressure Grouting • Blowing Sand or Pea Gravel Backfill • Transporting Concrete Into Common Receiving Bins

GET DONE FASTER, BETTER, MORE PROFITABLY WITH THESE "ADVANCED DESIGN" FEATURES

• Handles All Standard Mix Structural and Lightweight Concretes • Easy to Operate • Portability To and From the Job • Highly Flexible • Ideal for Big and Small Jobs—Production Range up to 35 Cu. Yds. Per Hour • Mobility On the Job • Low Cost.

To Help You to More Profits

Let AIRPLACO's Engineering and Technical Staff assist you. Through years of experience on all kinds of jobs, we can often recommend methods and techniques that will save you time and money. Next time you have a concrete job . . . call on AIRPLACO. There's no cost or obligation of course, so write, wire or phone when you have a problem.

Send for FREE BROCHURE and COMPLETE LINE CATALOG

AIRPLACO AIR PLACEMENT EQUIPMENT CO.

1007 WEST 25TH ST. • KANSAS CITY 8, MO.

WORLD'S LEADING MANUFACTURER OF "ADVANCED DESIGN" PNEUMATIC PLACING EQUIPMENT



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(Continued on page 84)



SAFETY + COMFORT

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Cradle, Headband and four *T-Straps*, all of polyethylene, form a smooth, shock absorbing, easy to clean assembly. While the cradle, fastened directly to the hat shell, provides the fixed safety margin, the connecting T-straps enable the headband to be easily raised, lowered and even tilted by pushbuttons and tabs.

It is equally simple to adjust the headband with its attached, all-around sweatband to clearly marked hat sizes 6¼ through 7½".

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To replace part 84, pull it loose from the T-straps by hand and fasten the new part by snapping the studs of the T-straps into the desired holes. No tools needed.



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Jackson Products

31739 Mound Road, Warren, Michigan

Sold Everywhere by Better Welding Supply and Safety Products Distributors

For more facts, use Request Card at page 18 and circle No. 307

The Most Economical Way to Handle Concrete

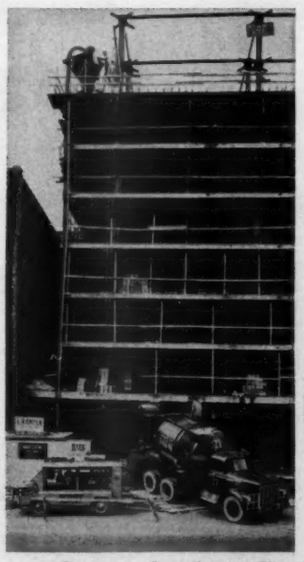
THE

"AIR EXTRUSION" METHOD

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ALL OF THESE JOBS

• Open Pours • Hard-to-Get-to-Pours • Tunnel Linings • Pressure Grouting • Blowing Sand or Pea Gravel Backfill • Transporting Concrete Into Common Receiving Bins

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WORLD'S LEADING MANUFACTURER OF "ADVANCED DESIGN" PNEUMATIC PLACING EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 308



Construction of new skating rink at the University of Alberta calls for use of huge precast concrete girders. B Model Mack positions the heavy beam under the crane for unloading. Mack steering and braking systems give quick, sure handling under difficult conditions.

MACK
for over 7 straight years
NO. 1
by far in sales of diesel trucks

Multi-million dollar construction project involving runway extensions on the Namao Airport near Edmonton, Alberta, found Macks working 'round the clock to beat winter weather. Dependable, trouble-free performance is expected and received from Mack trucks no matter what the job.

For more facts, use Request Card at page 18 and circle No. 309

Mack performance pays off on everything from

rinks to runways

On construction jobs of all kinds, experienced contractors are Mack boosters. Most trucks just can't provide the stamina and economy needed for month-in, month-out heavy-duty service under severe operating conditions.

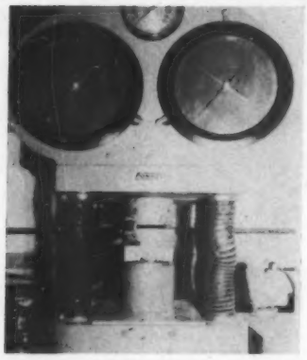
Experienced operators continually prove that solving the problem of high costs calls for quality equipment. Mack quality begins with Mack-built major components—front and rear axles, engines, frames, transmissions and brakes—which are made to the highest standards in the industry. It appears in special Mack features like the exclusive Balanced Bogie with Power Divider for positive traction over any terrain . . . and extends to Mack cabs, which offer the utmost in driver vision and comfort, easy access to all working parts, and minimum upkeep requirements.

You'll find that Mack quality construction shows up in every phase of operation—and where it really counts, in net profit figures. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

7555-A

MACK
FIRST NAME FOR
TRUCKS





These steel cubes, bonded together without any cleaning or preparation, are being subjected to a compression test on a Forney machine to test shear between the vertical surfaces. The combination failed through one shear plane but developed a high value.

(*Continued from page 81*)

formation. Epoxy crack sealers have been designed for sealing cracks and joints in horizontal concrete surfaces.

The uncured compounds have viscosities that vary from a thick cream to a free-flowing liquid after mixing.

Epoxy compounds have been developed to form protective surface coats over floors, walks, structural members, equipment, and parts. These epoxies are most suitable for coating concrete when harmful chemicals would cause rapid deterioration of the material.

Preparations

The effectiveness of epoxy compounds is dependent, among other factors, on the preparation of the surfaces to be treated. One specification is standard among all epoxy manufacturers: the surface must be thoroughly clean. Most also require a dry surface, but some manufacturers have developed compounds that are compatible with damp surfaces. All dust, laitance, grease, disintegrated material, and other foreign particles must be removed if the full adhesive capacity of the epoxies is to be developed. Any grease or oil on the surface will completely destroy the desired bond.

Many of the manufacturers recommend cleaning soiled concrete by a scrubbing with a 5 to 15 per cent solution of muriatic acid, followed by a flushing with clear water. The surface should then be allowed to dry before any epoxy compounds are used.

Sandblasting is recommended for metallic surfaces, and clean, sanded surfaces are preferred for all wood exteriors.

Engineers and contractors will be hearing more about the epoxy compounds on the market—and, undoubtedly, new applications and uses will be tried, proved, and standardized. THE END

Engineers, Inc., names

C. Richard Treptow has been appointed assistant vice president dealing with contract administration and client relations at Engineers, Inc., Newark, N. J. The company engineers and designs industrial plants.

HRB reports on laws, concrete pavements

■ "Highway Laws — 1959" contains the 1959 report of the Committee on Highway Laws and four papers that were presented at the 38th annual meeting of the Highway Research Board. The 29-page bulletin, No. 237, costs 60 cents.

At the same meeting, papers covering a progress report on continuously reinforced concrete pavements in Pennsylvania, and observations on their behavior were presented. Four other papers on continuously reinforced pavements reported on laboratory research, stresses and deflections, crack formation, and mechanics. A paper on bond and transflexural anchorage behavior of welded wire fabric was also presented. The seven papers are available in Bulletin 238, "Experimental Continuously-Reinforced Concrete Pavements: Progress Reports—1959," which has 104 pages and sells for $2.

Both bulletins may be obtained from the Highway Research Board, 2101 Constitution Ave., Washington, D. C.

Portland Cement opens two new offices

■ The Portland Cement Association, Chicago, has opened a new regional and a new district office. It now operates through 7 regional and 34 district offices in major U. S. cities.

Thomas D. Shiels, for five years district engineer in the Austin, Texas, office, has been made manager of the new south central region, which covers Oklahoma, Arkansas, Louisiana and Texas, with headquarters at Austin. Ted L. Edwards succeeds Shiels as district engineer in Texas.

A new district within the Rocky Mountain region has been created to serve New Mexico. Bernard C. Smith has been appointed district engineer, with headquarters in Albuquerque.

Edward W. Thorson, who had been supervising both the Denver district and the Rocky Mountain region, has become full-time manager of the region. The Denver district, covering Colorado and Wyoming, has been assigned to Jack Y. Barnes, formerly district engineer for Montana. He will be succeeded in Helena by Norman D. Baumgart.

FOR RESULTS LIKE THIS ON YOUR NEXT SHOT...

WHICH

EXPLOSIVE?

The Penn-Can Highway near New Milford, Penna., connecting the Pennsylvania Turnpike Northeast Extension with the New York Thruway. Contractors: D. A. Kessler Construction Company, Mt. Carmel, Penna. and Lycoming Construction Company, Williamsport, Pennsylvania.



Case history

Concrete surface overlay speeds bridge repair

Application of a quick-setting mortar topping material to a rough and hazardous section of road surface on the Brooklyn Bridge was the means of saving the contractor two entire road-laying operations and considerable expense, while making it possible to open that section to traffic the morning following application.

The material used for the job was Permatop, said to form an indestructible bond with concrete surfaces and to cure within 8 hours.

The Brooklyn Bridge workmen applied the plasticlike material to a spalled area of several thousand square feet. The job was completed in 6 hours, and the only tools used were a surface trowel and a wooden screed.

Once it set, the new overlay became completely waterproof and weatherproof. It was found to resist corrosion against oil, grease, salt, gasoline, and a large number of chemicals that are often encountered in normal road wear. Salt reportedly has no effect upon Permatop.

For further information write to the Permagile Corp., of America, Dept. C&E, 34-43 56th St., Woodside 77, N. Y., or use the Request Card at page 18. Circle No. 69.

A revised "Manual of Uniform Traffic Control Devices for Streets and Highways" will soon be completed. The last edition was published in 1948.

Allis-Chalmers builds new factory at Harvey

■ A multimillion-dollar engine manufacturing facility is being erected by Allis-Chalmers Mfg. Co., Milwaukee, Wis., for its Harvey, Ill., Works. It will provide 515,000 more square feet of floor space in which to machine and assemble engines, using a straight-line production system.

The new plant will produce a wide line of diesel, natural-gas, butane, and gasoline engines used in many Allis-Chalmers products, as well as power units for various markets including those using engine-driven generator sets produced at the Harvey Works. An engineering and development research laboratory has already been built on the site and is in operation.

Convention Calendar

June 8–11 National Society of Professional Engineers
Annual Meeting, Statler Hotel, Boston, Mass. Charles Ritchie, NSPE, 2029 K St. N.W., Washington 6, D. C.

June 13–14 National Limestone Institute, Inc.
Board Meeting, Edgewater Beach Hotel, Chicago, Ill. Robert M. Koch, NLII, 1015 12th St. N.W., Washington, D. C.

June 13–24 Fundamentals of Welding Engineering
Summer Conference Course, Ohio State University, Columbus, Ohio. W. L. Green, Department of Welding Engineering, Ohio State University, 128-A Industrial Engineering Bldg., 190 W. 19th Ave., Columbus 10, Ohio.

June 19–24 Management Development Conferences
Conferences, California Institute of Technology, Pasadena, Calif. Management Development Center, California Institute of Technology, Pasadena, Calif.

June 19–24 Western Association of State Highway Officials
Meeting, Multnomah Hotel, Portland, Ore. W. C. Williams, chief engineer, Oregon State Highway Commission, Salem, Ore.

June 20–25 American Society of Civil Engineers
Reno Convention, Mapes, Riverside, and Holliday Hotels, Reno, Nev. W. H. Wisely, executive secretary, ASCE, 33 W. 39th St., New York 18, N. Y.

June 22–23 The Asphalt Institute
Midyear Business Meeting, Glacier Park Lodge, Glacier Park, Mont. TAI, University of Maryland, College Park, Md.

June 26–July 1 American Society for Testing Materials
Annual Meeting and Apparatus Exhibit, Chalfonte-Haddon Hall, Atlantic City, N. J. F. F. Van Atta, assistant secretary, ASTM, 1916 Race St., Philadelphia 3, Pa.

June 27–29 American Society of Landscape Architects
Sixty-first Annual Meeting, Waldorf-Astoria Hotel, New York City, N. Y. Wolcott E. Andrews, general chairman, ASLA, 238 E. 68th St., New York 21, N. Y.

June 27–29 School for Highway Superintendents
School, Cornell University, Ithaca, N. Y. J. W. Spencer, highway research and extension engineer, Riley-Robb Hall, Cornell University, Ithaca, N. Y.

July 6–8 Civil Engineering Education
Conference, University of Michigan, Ann Arbor, Mich., sponsored by the American Society of Civil Engineers, the American Society for Engineering Education and Cooper Union. Dr. Felix A. Wallace, Cooper Union, New York 3, N. Y.

July 17–20 National Bituminous Concrete Association
Mid-year meeting, Concord Hotel, Kiamesha Lake, N. Y. NBCA, Suite 218, 1145 19th St. N.W., Washington 6, D. C.

July 18–22 Thin Shell Concrete Structures
Course, Case Institute of Technology, Cleveland, Ohio. Dr. John B. Scalzi, associate professor of structural engineering, Case Institute of Technology, University Circle, Cleveland 6, Ohio.

August 14–19 National Shade Tree Conference
Meeting, Statler Hotel, Boston, Mass. NSTC, Sec.-Treas., L. C. Chadwick, 1827 Neil Ave., Columbus, Ohio.

Limestone groups merge

■ The National Crushed Limestone Institute, Inc., and the National Agricultural Limestone Institute, Inc., have merged to form the National Limestone Institute, Inc. The organization represents more than 500 of the nation's producers.

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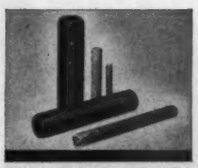
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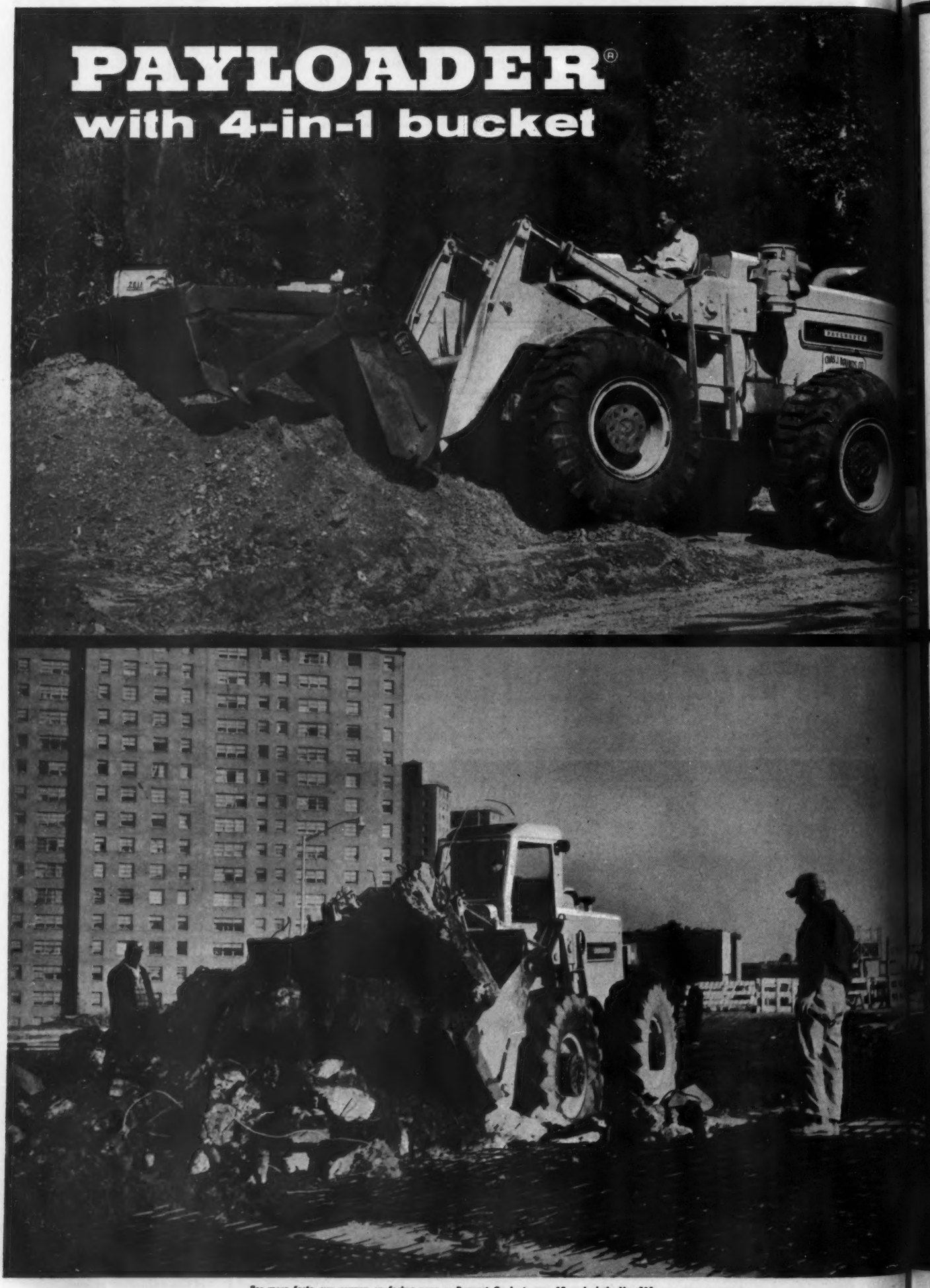


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For more facts, use Request Card at page 18 and circle No. 310



For more facts, use coupon on facing page or Request Card at page 18 and circle No. 311

"We like the mobility and versatility"

SAYS LOS ANGELES CONTRACTOR

Mr. C. J. Rounds, Jr. of C. J. Rounds Co. is speaking about their Model H-90 PAYLOADER tractor-shovel with Drott 4-in-1 Bucket that has served several months on this 1½-million-dollar contract with the Los Angeles Flood Control District.

It has performed a large variety of different work on this contract such as fine grading, bulldozing, backfilling, truck-loading, pulling piles and loading brush according to excavating foreman, Ray Brookins, who adds, "It's a fine machine." Operator R. J. Mann says, "I can do much more with the 4-in-1 bucket than with a regular skip."



"We like its durability"

SAYS NEW YORK CITY CONTRACTOR

"The H-90 PAYLOADER with 4-in-1 bucket is very efficient," says Robert V. Rusciano, general superintendent for the prime contractors, Rusciano Construction Corp. and Del Balso Construction Corp. on this 5½-million dollar section of Interstate Highway 87.

"We especially like it for close-quarter work, its durability for rough material handling, and the clean dumping action of the bucket. The H-90 has very good maneuverability giving fast operation with minimum hold-up of moving traffic that we often have to contend with."

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6-B-6 R

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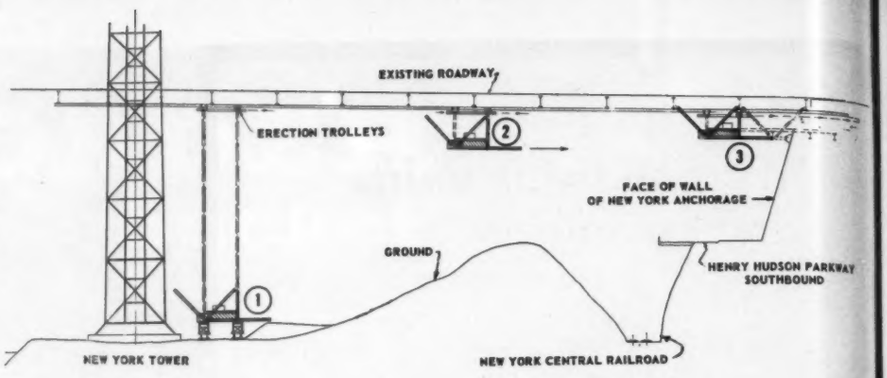
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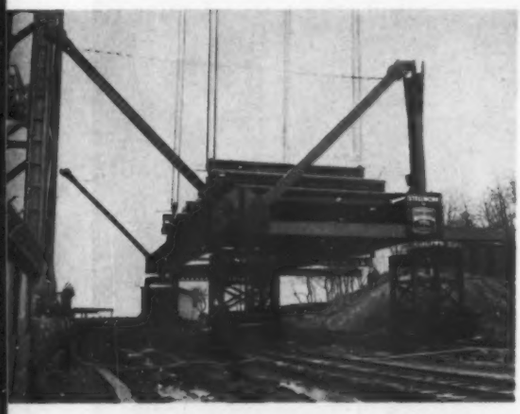
6-B-6

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The first section of structural steel for the lower level of the George Washington Bridge is erected in three stages, without interfering with traffic on the existing span, by crews of Bethlehem Steel.

1. A 220-ton section is lifted from the shoreside base of the New York tower to the lower-deck level by four erection trolleys—traveling platforms complete with hoisting engines, power tools, etc., suspended from temporary tracks under the existing span.
2. The section is then moved eastward toward the New York anchorage by means of cables attached to the hoisting engine and traveling beneath trolley rails previously installed on the underside of the roadway.
3. The deck assembly will be placed in its permanent position at the New York end to form the first steel section for the second deck.

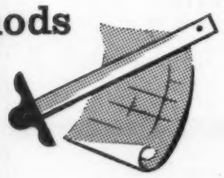




A section for the lower 6-lane deck of the George Washington Bridge—a section 90 feet long, 108 feet wide, and 30 feet deep—travels about 200 feet on rails to reach a point beneath the bridge deck after being assembled by Bethlehem crews.

Dramatic day and night work starts lower-level deck for George Washington Bridge

methods



by TONY MAVROUDIS
field editor

On a frosty Monday morning in mid-January, a section of steel weighing some 220 tons, was raised about 200 feet to start work on the new 6-lane lower level of the George Washington Bridge. Under construction by The Port of New York Authority to increase the capacity of the famous bridge linking New York and New Jersey, this lower deck, together with its approaches, will cost some $180 million.

The first section to be raised—composed of two built-up girders for floor beams, two plumb posts, four 14WF diagonals, two 60-foot box-section lower chords, stringers, grid flooring, barricade, sidewalk, and lateral bracing—measured 90 feet long, 108 feet wide, and 30 feet deep. It took crews of Bethlehem Steel Co. about 3 days to assemble and prepare the section for erection. This work was done on

(*Continued on page 90*)



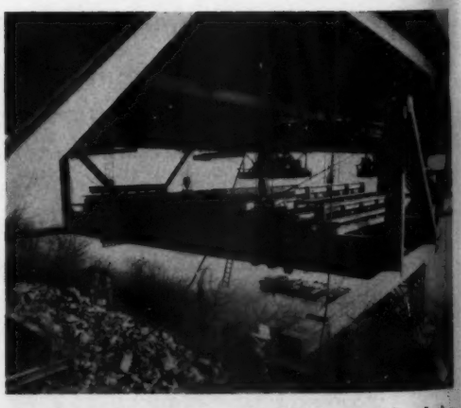
The section is raised by four 15-part sets of ¾-inch wire-rope falls to a point about a foot below final elevation. Falls are handled by four erection trolleys that moved the section 650 feet toward the anchorage in a 40-minute operation.



Traffic on the Henry Hudson Parkway was detoured during the night operations, which were completed by morning. A pair of trolleys was connected to form a unit, and each had one operator to take up on pull-ahead cables for the move.



Traffic continues using the deck of the bridge while the sections for the lower deck are being hoisted into place. This section will be moved toward the New Jersey anchorage with the same technique used on the New York side.



The first section erected on the New Jersey side of the bridge is approaching the anchorage. Structural-steel flooring is carried on the 200-ton section, which is composed of floor beams, plumb posts, diagonals, two 60-foot box-section lower chords, and stringers.

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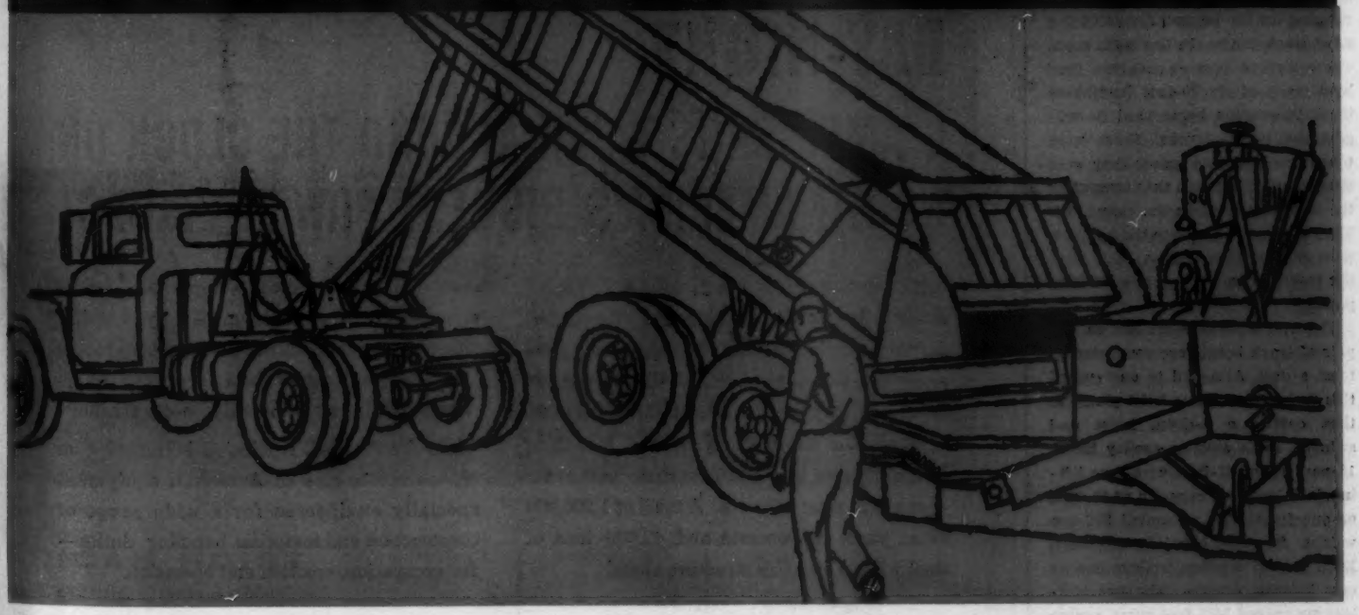
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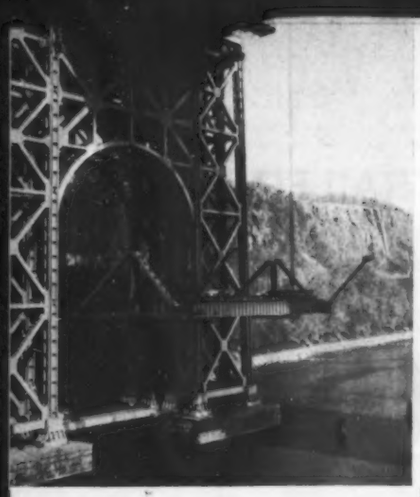
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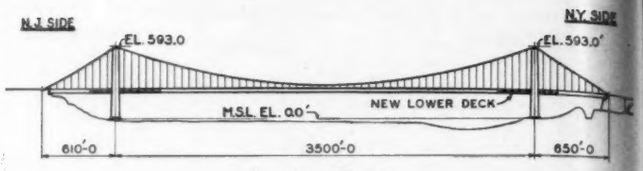
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A river-span section is being raised at the New Jersey side; each of the trolleys has two sets of falls spaced about 30 feet apart. The pickup point is at the floor beams, which are on this spacing.



Elevation of bridge

(Continued from page 88)

the New York shore, adjacent to the bridge tower.

This section was the first of 76 that have to be raised in both the side spans and the main river span. What made erection of this particular section so dramatic was that it fitted into the bridge directly over the heavily traveled southbound lane of the Henry Hudson Parkway. As a safety precaution, no traffic was allowed to pass under the work crews as they connected the section to the upper level of the bridge. This work was done at night, when traffic flow was lightest and detours caused a minimum of inconvenience to motorists.

The big lift

This erection phase started in the New York side span and later in the New Jersey side span. Erection of the structural steel for both side spans was completed by the end of January. Work on each side of the river was handled by means of four erection trolleys supported by, and running on, the four lines of 24-inch track beams previously erected and left in place. (See "New Methods Used in Double-Decking George Washington Bridge," C&E, March, 1960, page 94.)

Each erection trolley was supported by four trolley trucks, each having four pairs of 8-inch-diameter wheels running on the bottom flange of the fixed track beams. In the main span, where work is now in progress, four lines, each of six 30-foot lengths of track beams, are being used to support the trolley trucks. These were taken from the side spans; they were simply pulled through the tower after the side-span erection was completed. They are moved ahead in the hangers, with the erection trolley, each time the trolley is moved to a new working position.

The two trolleys operating on one pair of track beams are connected to form a unit. Attached to one end of this unit is the engine hoist platform that carries a 3-drum hoist and swinger. Each erection trolley has a 15-part set of ¾-inch wire-rope lifting falls having a capacity of 55 tons or one-fourth the estimated 220-ton weight for the heaviest assembly. Each pair of erection trolleys has its own hoisting engine. The two trolleys are spaced 54½ feet apart, center to center. Each unit is approximately



DAY-NIGHT

6 AMERICANS WORK AROUND THE CLOCK ON NORTH AMERICA'S BIGGEST POWER PROJECT

WORK NEVER STOPS on the gigantic $720,000,000 Niagara Power Project, largest hydro-electric development in the Western Hemisphere. Five American Revolvers work at three levels on Merritt-Chapman & Scott's $98,800,000 contract for the main Niagara Generating Plant. By day they handle material, set forms —at night, pour concrete. A total of 1,200,000 cubic yards of concrete and 42,000 tons of steel will go into this structure alone!

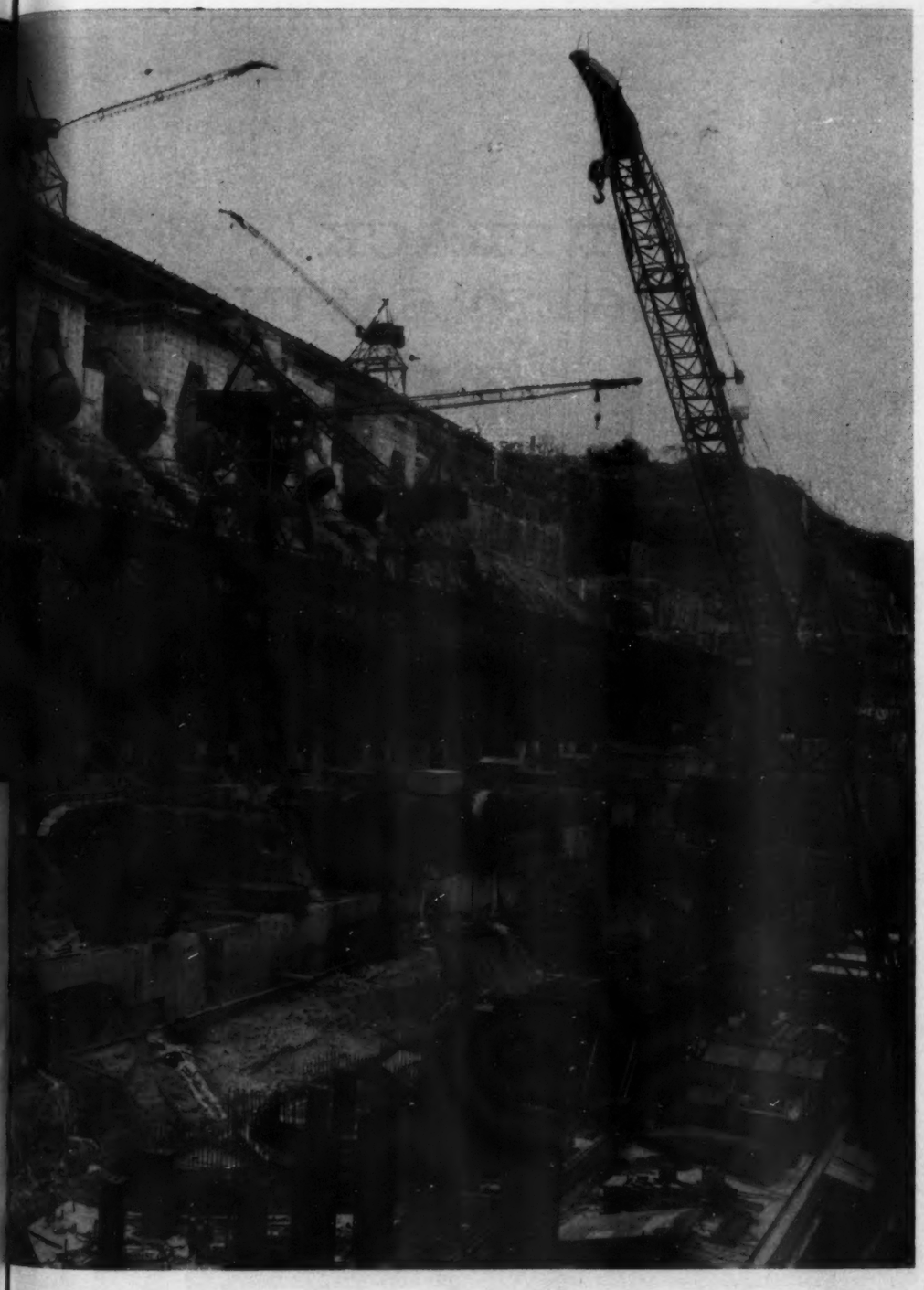
American's work-horse dependability is essential for contractors on penalty jobs like this where equipment failure can eat-up profits fast. Top contractors choose top rated, tough American Cranes to keep jobs on schedule.

Write for detailed, illustrated information on the complete line of American equipment specially engineered for a wide range of construction and materials handling duties—for excavation, erection and operation.





Methods used in erecting main-span sections are similar to those for side-span sections. At left, assemblies are floated into position on a barge that is held in place by an anchor barge while trolleys make the hookup. Four sets of lifting falls are hooked onto the section and it is raised into place, right, on the New York side of the Hudson.



106 feet long. To make a lift, each trolley lowers two sets of falls that are spaced about 30 feet apart, because the pickup point is at the floor beams and these beams in the sections are 30 feet apart.

Two of the drums on each hoist are used to operate the two sets of lifting falls. The third drum is used for the pulling line to move the entire assembly ahead to the next working position. A fourth line, operated from the swinger drums, was used during the side-span erection as a pull-back rope for moving the erection trolley back to the tower for each lift and for making minor adjustments in location when picking up an assembly.

Each trolley has two work platforms. These are spaced 60 feet apart, because the section connections to the upper level are made at the upper level's floor beams, which are also 60 feet apart. The platforms are 10 feet wide and can extend—roll out on wide flange beams—a distance of 9 feet so that they extend beyond the connection points. Thus, the crews can work from the two platforms at the same time and make the connections with ease and safety.

Nighttime move

The first sections to be erected in the New York and New Jersey side spans, were to be located at the anchorages. Each assembly was lifted from the yard track adjacent to the tower, hoisted to just below its final elevation, and then pinned off to the trolleys with 8 heavy wire-rope pennants. The trolleys were then hauled back to the anchorage where the assembly was correctly located and then hoisted into final position by entering the web members between the gussets and pinning them off. The trolleys were then free to be hauled back to the tower for another assembly.

As each side-span assembly was erected, the track beams were left in place, since these are permanent stringers from the new deck and will be removed and erected later. All track-beam stringers were taken from panels near the point where they are used.

After the section completed its 200-foot ascent and was still about a foot below the connection points on the upper level, the Bethlehem crew looped and pinned the pennants into the floor-beam hitches as a safety measure. The falls were then slacked off, and the entire 220-ton load was on the pennants. For the next two hours, the crew prepared for night

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For more facts, use Request Card at page 18 and circle No. 313

(*Continued from preceding page*)

operations. Ladders were lashed securely into place on the platforms, and floodlights were installed and tested. At this time, each man was briefed on his particular work assignment.

At midnight, the Bethlehem crew returned for the second phase of operations—moving the section horizontally about 650 feet toward the anchorage and connecting it to the upper roadway gussets.

With the crews ready on the platforms, the two hoist operators, one per trolley, began to take up on the pull-ahead cables, and the two trolleys were smoothly and evenly inched along toward the anchorage. The man at the auxiliary hoist paid out the pull-back cable. A taut music wire, strung between the two trolleys, helped the hoist operators gage their speed and keep abreast of each other.

Two high-visibility amber signal lights glowed on the trolleys during the move. When this section reached the anchorage, the lights winked off, notifying everyone that the horizontal move was accomplished.

The two trolleys, lugging the heavy load, covered the 650-foot move in about 40 minutes. The section rode along about 1 foot below final elevation and with the work platforms pulled in. At the connection point, directly over the Henry Hudson Parkway, the work crews extended the platforms and took up on the falls, thus taking the load off the pennants. The section rose the 1-foot vertical distance to its final position, and the connecting work began. The connections to the existing bridge will be riveted, while all other connections will be made with Bethlehem A-325 high-strength bolts.

Road detours

Below the work crews, The Port of New York Authority police, aided by Bethlehem workmen, detoured traffic. Instead of passing under the work platforms, the southbound traffic of the Henry Hudson Parkway detoured around the New York anchorage of the bridge and proceeded down the northbound lane. Northbound traffic was shunted to Riverside Drive for a short stretch to avoid the bridge construction activity and detour. Traffic was restored to normal by morning after the connection work had been completed.

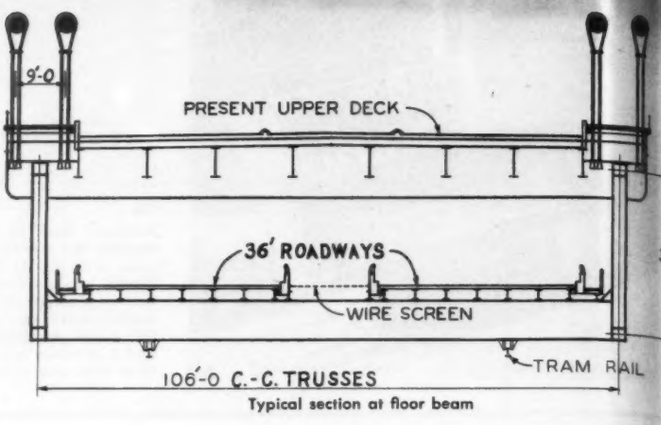
Field connections

All field connections of new to old steel are being riveted. It was considered impractical to try to remove the many coats of paint on the present gusset plates down to bare steel, and this would have been necessary if the A-325 bolts had been used. All field connections between new members, however, are being made with the A-325 bolts.

Main-span procedure

In the main span, the erection procedure is very similar. Here, all assemblies are being made in the New Jersey yard, each on a single barge tied up at the dock. The two derricks can unload material independently from two separate barges and assemble the 57 main-span sections.

The flotation barges are located and held in position by being tied to an anchor barge while the erection trolleys are hooking onto an assembly. This anchor barge is held in position by a pair of anchors upstream and another pair downstream. The anchors are standard stockless or Danforth-type ship anchors weighing 1,500 to 3,000 pounds. They are being placed and moved by a 40-ton-capacity derrick work boat that is shifted by a tug. Each pair of anchors is so located



Typical section at floor beam

For more facts, use Request Card at page 18 and circle No. 314 ▶

BEST TRACK... BIGGEST SAVINGS

Allis-Chalmers boosts work hours, cuts costs with the best tractor undercarriage in the business. You get industry's toughest track... best designed track guards ... certified, permanently lubricated truck wheels, idlers, support rollers.

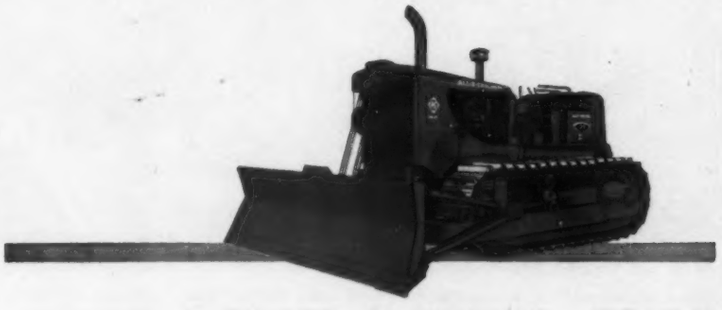
Next time you watch track shoes squeal and grind against jagged rock . . . or see 'em buried sprocket-deep in mud, consider this: Nothing slugs it out with tough conditions like an Allis-Chalmers tractor undercarriage.

Specially heat-treated track shoes, side bars, track pins and bushings are the industry's toughest. Bushings extend into counterbored side bars to seal out dirt, provide more bearing area.

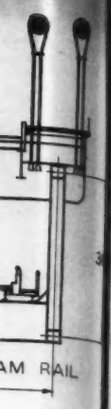
Track guiding truck wheel guards provide a deep-flanged guide channel that keeps track riding true on sprockets, idlers and truck wheels even in the roughest and toughest going. The solid A-frame holds the truck frames in absolute alignment — keeps track running straight.

PERMA-SAFE truck wheels, idlers and support rollers on all Allis-Chalmers tractors roll on tapered roller bearings, are protected against dirt and moisture by Positive Seals. Factory-lubricated, they're certified never to need further greasing.

We invite a maintenance cost comparison with any other tractor undercarriage. We further invite you to inspect the Allis-Chalmers healthy, long-lived tractor engine, the all-steel main frame, double-reduction final drives and many other cost-cutting features. Your Allis-Chalmers dealer will be happy to give you full details. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



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that several working locations of the anchor barge can be made by adjusting the anchor lines.

The anchor barge has a 4-drum hoist with spools for taking in and paying out the anchor lines to adjust the barge location. Four or five locations and lifts can be made from one setting of the anchors. The anchors themselves are located by a short ¾-inch wire-rope mooring line and lighted buoy. The main anchor lines are ⅞-inch wire rope, 1,800 feet long, to give a minimum scope (wetted length of line divided by depth of water) of about 8 to 1. The water is quite shallow at the New Jersey shore, increasing to 35 feet in depth at the center of the river. The deepest water is 75 feet for a width of about 600 feet adjacent to the New York shore.

The flotation barge, with a complete lower-deck assembly aboard, is brought up to the anchor barge by a tug and tied up endwise to the downstream end.

Care has to be exercised to prevent the tug from fouling the anchor lines. The four sets of lifting falls from the two erection trolleys can then be lowered for hooking onto the assembly. Each pair of lower falls blocks will be tied together with a rigid strut to prevent the blocks from rotating or "spinning" and twisting up the falls, a common occurrence with a long set of falls.

Personnel

For Bethlehem Steel Co., the field work is being performed under the direction of George P. Adair, manager of erection of the New York Erection District. Bethlehem's project engineer on the job is James A. Sterner. C. E. Adams is the field superintendent for Bethlehem. Henry A. Druding is the resident engineer for The Port of New York Authority, a bi-state agency operating the George Washington Bridge. THE END

Charts show organization of highway departments

■ Charts showing the organization of the highway departments in all states except Alaska and Hawaii have been published in Special Report 53 of the Highway Research Board. The District of Columbia and Puerto Rico are also included.

The report is a revision of one published in 1954. Entitled "State Highway Organization Charts: 1959 Revision," it can be obtained for $1.60 from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.





Where jobs are toughest, you need Autocar most. This is an Autocar AP-15 with the highly efficient planetary gear drive.

"Heavy hauling's for Autocar ... not a substitute"

Need a truck that's versatile, tough under punishment, ready to do any kind of heavy job in any kind of weather? That's the kind of work for an Autocar AP-15.

This Autocar is at home on slippery shale rock; in deep, rutted mud; up grades that look impossible. That's because—with its planetary rear axle—the power is applied with greater gear reduction directly to the rim of the wheel.

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Each Autocar is custom-engineered to order. Operators agree, Autocar is the "World's Finest." Why try to get along with less? White-Autocar comprehensive service throughout the United States.

Autocar
"World's Finest"

Division of
The White Motor Company
Exton, Pa.

For more facts, use Request Card at page 18 and circle No. 315

Thew appoints two to management posts

■ The Thew Shovel Co., Lorain, Ohio, has appointed George M. Bassnett director of its European operations. He was also made managing director of Lorain-Holland N.V., The Hague, The Netherlands, a wholly owned Thew subsidiary.

For the past 12 years, Bassnett was president of Coles Cranes, Inc., the American subsidiary of Steel & Co., Ltd. of England, and president of Steel's Engineering Products, Ltd., its Canadian subsidiary.

Thew has named J. D. Zook manager of the product development department, replacing Quincy J. Winsor, who has retired. Zook will be responsible for initiating and testing new product developments and improvements, with emphasis on customer requirements. The company manufactures power shovels, cranes, and front-end loaders.

Winning bridge designs presented in new book

■ The winning designs of the James F. Lincoln Arc Welding Foundation's 1958 Award Program are presented in a new book, "Welded Interstate Highway Bridges." This is the fourth competition that the group has sponsored, and the designs represent a cross section of the best current practice in bridge construction for the Defense and Interstate Highway System.

Copies are priced at $2 in the United States and $2.50 elsewhere. They are available from the foundation, Cleveland 17, Ohio.

Revised publication on contract forms

■ A 1960 edition of "Suggested Form of Contract for Use in Connection with Engineering Construction Projects" has been jointly prepared by the Associated General Contractors of America and the American Society of Civil Engineers.

Sections have been added covering changed conditions, extension of time, responsibility for work, partial completion and acceptance, damage claims, and acceptance and final payment. Sections on progress payments and contractor's liability have been revised. Some outmoded sections have been dropped.

Copies are available at 25 cents each from the AGC, 1957 E St. N.W., Washington 6, D. C., or from ASCE, 33 W. 39th St., New York 18, N. Y.

New Essick position

■ Frank Jennings fills the new position of national field sales manager for Essick Mfg. Co., Los Angeles, Calif., manufacturer of vibrating compactors, concrete finishers, portable asphalt surface heaters, and other construction machinery.

The post was created because of the need for greater contact between factory headquarters and sales territories. Jennings has been with Essick for 20 years.

Case history

Diesel pile hammer saves $1,800 per month

Because of the elimination of a 600-cubic-foot air compressor with its related costs, the R. Zoppo Co., Inc., of Norwood, Mass., states that a Delmag D-5 diesel pile hammer has saved some $1,800 per month.

Breakage loss at the top of the sheeting has also been eliminated. In driving 12,000 feet of sheeting in a tough area, it was not necessary to burn a single sheet.

For further information write to The Foundation Equipment Corp., Dept. C&E, 100 Elizabeth St., Newcomerstown, Ohio, or use the Request Card at page 18. Circle No. 97.



Owned and operated by R. Zoppo Co., Inc., a Delmag D-5 diesel pile hammer is shown working on the Deer Island Treatment Plant in Massachusetts.



THE JOB was drilling 3″ holes to 25′ depth, in limestone so hard the insert carbide bits had to be reground after every 48′ to 50′ of drilling.

THE TEAM is a Jaeger "900" rotary compressor behind two Thor TR-5 air-and-hydraulic crawlers with 4½″ drifters.

FOOTAGE AVERAGED 2′ per minute (1′ per drill), the rate varying with the ledge strata.

A NOTABLE ECONOMY was in the fuel-saving, engine-saving speed of the compressor. *It maintained 100 psig at the drills without ever running faster than 1400 rpm.*

World's slowest running "900" compressor powers today's fast drilling team

JAEGER DELIVERS MORE AIR FROM SAME HORSEPOWER

Jaeger "900" uses the same GM 6-110 Diesel as other "900" compressors, but delivers its rated capacity at 100 rpm slower speed — 1700 instead of 1800. Its fuel factor is more than 500 cu. ft. of delivered air per pound of fuel consumed. The engine lives longer because it takes it easier throughout its operating life. Compressor life is longer, too. 8000 hours without a vane replacement is not unusual. Ask any Jaeger owner; ask your Jaeger distributor — or send for new Catalog JC-O.



Air-and-hydraulic drill adapts to any desired position. Drill and compressor make a self-powered mobile "team".

THE JAEGER MACHINE CO., 701 Dublin Ave., Columbus 16, Ohio

Jaeger Machine Co. of Canada, Ltd., St. Thomas, Ontario

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Why do so many products introduced by Hercules eventually become the standard of the entire industry? The answer lies in Hercules vast experience in truck equipment design—plus Hercules outstanding ability in the field of research and development.

This combination know-how enables Hercules to come up with dramatic new concepts in body and hoist design—based on sound engineering principles—not occasionally, but consistently.

It has enabled Hercules to establish and pioneer dozens of production "firsts"—including front-mount telescopic hoists and hydraulic remote-controlled tailgate equipment—design innovations that have saved truck equipment users millions of dollars in equipment costs and operating expense.

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GALION, OHIO, U.S.A.

HERCULES

methods





This Croll-Reynolds Hightovac system is being used to drop aggregate temperatures to about 35 degrees so that concrete for Charlotteburg Dam near Newfoundland, N. J., will be below 60 degrees at placement. Pressure is dropped inside the vacuum-tight containers, and water serves as the refrigerant to bring aggregate temperatures down.

Vacuum method of cooling aggregates and concrete placement by cableway help

Bypass problems in concrete production

Aggregate cooling by a vacuum method and cableway placement of concrete have eliminated what might have been big problems in construction of the new Charlotteburg Dam across the Pequannock River near Newfoundland, N. J.

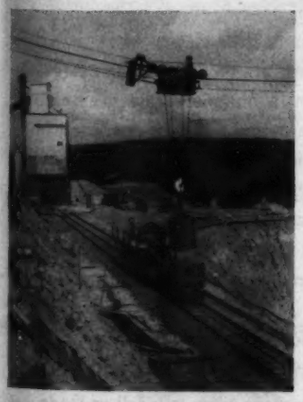
Use of the cableway makes it unnecessary for batch trucks to operate over steep haul routes. The sand and aggregate cooling system works efficiently to keep the temperature of the concrete mix at placement well below the 60 degrees called for by specifications.

Berlanti Construction Co., Inc., Harrison, N. Y., is the contractor for the 685-foot-long, $3,800,000 project, part of an $8,700,000 program to increase the existing water supply of Newark, N. J., by about 9.5 million gallons per day.

Concrete by cableway

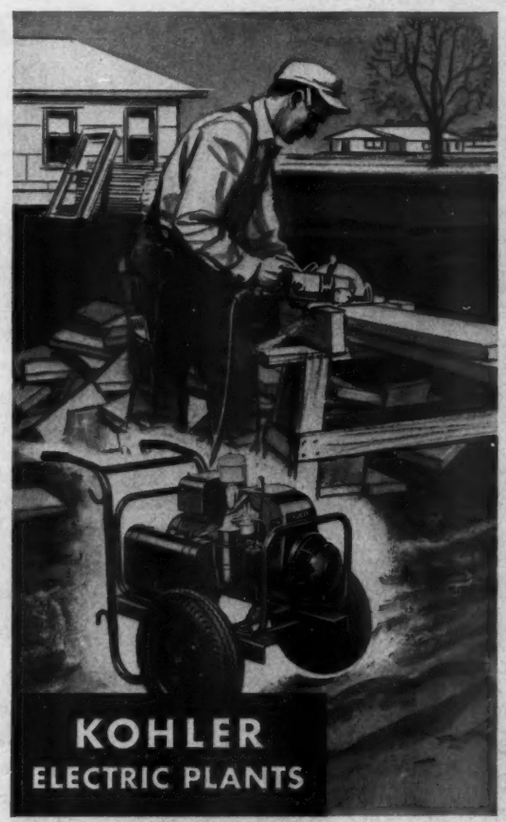
Because the river floor at the dam site is about elevation 660, and the banks on each side of the river rise to elevation 750, the contractor decided on a cableway to handle the concrete placement for a number of reasons. First of all, a cableway was available for purchase, and its use would eliminate the need for batch trucks to use steep haul routes. This in itself was a strong determining factor; the only haul routes that

(*Continued on next page*)

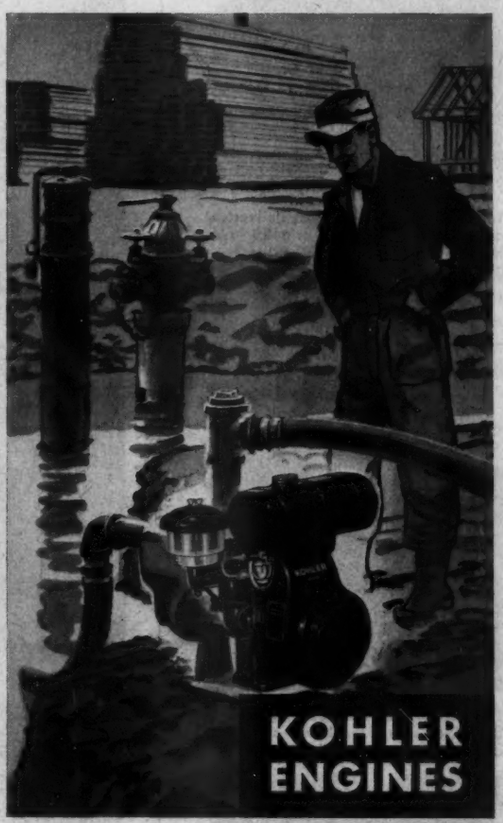


The cableway system is used to deliver concrete to crews instead of a truck delivery system requiring haul units to use steep roads. A Blaw-Knox 4-yard concrete bucket is being picked off a flatcar pulled by a Plymouth locomotive. The empty will be brought back to the plant. Tracks roughly parallel those that are used for the head tower.

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4-Cycle • Short stroke • Air-cooled. Model K91. Sizes from 4 to 24 H.P.

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For more facts, use Request Card at page 18 and circle No. 318

(Continued from preceding page)

could be used would be almost impassable during inclement weather. Another consideration was the span of the dam and the various elevations required to form the bulkhead, intake, and spillway monoliths. In all, the dam has 14 monolith sections. The east bulkhead has four 50-foot monoliths; the spillway also has four 50-foot monoliths; the intake, one 50-foot monolith; and the west bulkhead, three 50-foot monoliths.

On each side of the bulkheads is a core wall that ties into the existing ground. The east core wall is made up of a 30-foot monolith, while the west core wall consists of a 55-foot monolith section. The bulkheads are being brought up to elevation 750 feet and the spillway to a crest elevation of 738 feet. A bascule gate, 200 × 5 feet, will raise the controlling elevation at the spillway section to 743 feet.

The head tower rides along 550 linear feet of circular track located on the west side of the river. It is about 1,200 feet from the stationary tower, which is located on the existing slope of the east bank. This tower is supported and held down by long anchor bolts grouted into rock, plus cables tied to deadmen.

The head tower, equipped with a General Electric 300-hp hoisting engine to power the cableway, has electric-motor drives for the track wheels. Electric telephone sets, spotted at the pickup point, dumping point, batch plant, and the head tower, enable the crew to coordinate the movements of the concrete buckets.

Concrete plant

A. C. S. Johnson concrete batch plant, located just down stream on the west bank, provides the concrete for the cableway buckets. The plant, equipped with two Koehring 4-yard tilting-type mixers, charges Blaw-Knox 4-yard air-operated buckets that ride on a rail car pulled by a Plymouth locomotive.

The tracks run from the batch plant, roughly parallel to and in front of tracks for the head tower. As one bucket is being handled by the cableway, a second bucket on the flatcar is being filled at the batch plant. By the time the cableway returns the empty bucket, the flatcar is in position under the cables with a full bucket. The empty is then placed on the railcar and the second bucket picked up.

Batch plant

The Johnson batch plant is equipped with two silos—one 1,100-barrel silo for fly ash and a 4,000-barrel silo for portland-cement storage. Type 2 cement, delivered by bottom-dump rail cars using a siding, is transferred to the silo by a Robinson 4-inch air conveyor. Trucks deliver fly ash directly to the enclosed bucket elevator charging the silos.

Trucks also deliver aggregate to the job from a commercial quarry located about 8 miles from the site. Each of the different sizes of stone and sand is dumped into one of the



Trucks making aggregate deliveries dump into one of five Erie 20-yard hoppers that charge one of the two 30-inch conveyor belts.

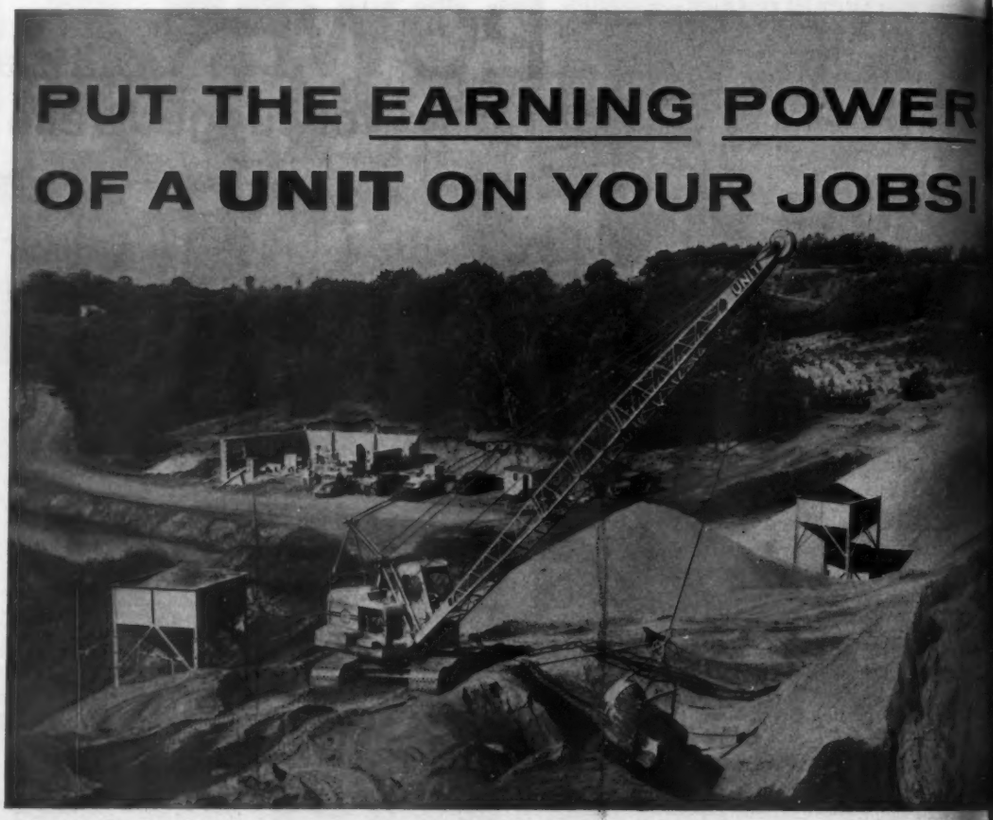


The inclined 30-inch belt feeds the Hightovac setup; the lower one goes directly to the batch-plant conveyor.



Water for the plant is supplied from the river upstream from the dam. Two Layne & Bowler pumps on this platform send the water to the plant through a 12-inch line.

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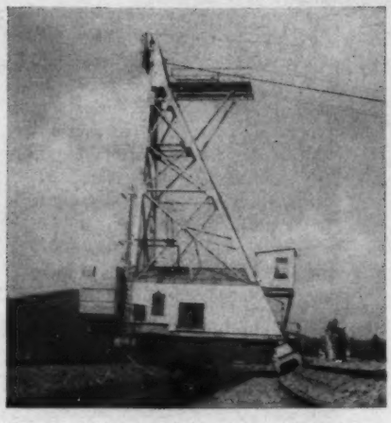
The modern Unit line of excavators and cranes gives you bigger EARNING POWER because they are bigger producers on any job—faster cycling, easier operating—plus the built-in rugged dependability that keeps them on the job hour after hour, with negligible maintenance expense.

No other machines in their class perform like a UNIT, because none are built like a UNIT. No one else offers you a one-piece cast gear case with all gears, shafts and bearings operating in an oil bath; automatic traction brakes; straight-in-line engine torque converter drive; all disc type operating clutches; the liberal use of drop forged parts; heat treating on all essential components; full vision operator's cab — a combination of features you don't find even on the highest priced machines.

You'll find a UNIT is worth more when you buy it—and worth more when you sell or trade. Before you buy another excavator, compare UNIT—you'll be glad you did. Write for literature on the models shown or see your nearby UNIT distributor.



The stationary tower for the 1,200-foot-long cableway is held by anchor bolts grouted into the rock and cables tied to deadmen.



The head tower of the cableway is equipped with a General Electric 300-hp hoisting engine to power the cableway and has electric-motor drives for the wheels.



Monoliths rise on both sides of a temporary steel pipeline that was constructed under a previous contract to carry river water through the dam site. The line connects with the permanent reinforced-concrete conduit that leads to the aqueduct supplying the city of Newark with water.

CRAWLER SHOVELS
5 CONVERTIBLE MODELS

A rugged line of power-packed machines, designed for today's competitive bidding. Fast operating, simple in design and fully convertible for maximum versatility.

Model	Shovel	Hoe	Dragline	Crane	Clamshell
513C	½ Yd.	½ Yd.	½ Yd.	5½ Ton	½ Yd.
614	½ Yd.	½ Yd.	½ Yd.	8 Ton*	½ Yd.
617	⅝ Yd.	⅝ Yd.	⅝ Yd.	10 Ton*	⅝ Yd.
1020	¾ Yd.	¾ Yd.	¾ Yd.	12½ Ton*	¾ Yd.
1220	¾ Yd.	¾ Yd.	¾ Yd.	16 Ton*	¾ Yd.

*Maximum Crane Capacity.



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4 CONVERTIBLE MODELS

Select the size to fit your needs — all with finest engineering and exclusive quality features. Mounted on rugged carriers for dependable performance on the job and between jobs.

Model	Crane	Shovel	Hoe	Dragline	Clamshell
513T	10 Ton	½ Yd.	½ Yd.	½ Yd.	½ Yd.
1014	15 Ton	⅝ Yd.	⅝ Yd.	⅝ Yd.	⅝ Yd.
1520T	20 Ton	¾ Yd.	¾ Yd.	¾ Yd.	¾ Yd.
360T	30-40 Ton	.....	.....	.....	.....



MOBILE CRANES
2 CONVERTIBLE MODELS

Self-propelled, one man controlled and operated, for on or off highway use. Big capacities, short turning radii. Convertible for greater versatility.

Model	Crane	Dragline	Shovel	Hoe	Clamshell
357	15 Ton	½ Yd.	½ Yd.	½ Yd.	½ Yd.
1520	20 Ton	¾ Yd.	.....	.....	¾ Yd.



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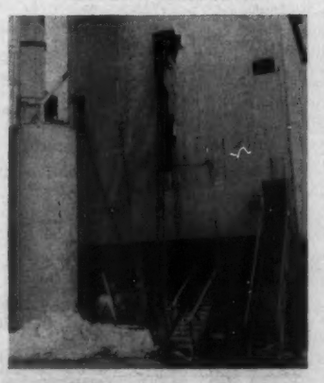
five Erie 20-yard receiving hoppers with electrically operated feeder gates. These charge one of two 30-inch inclined conveyor belts. Sand and ¾ and 1½-inch stone are picked up by one belt conveyor and transferred to the vacuum-cooling setup. The remaining aggregate—3 and 6-inch stone—is charged onto the second belt, which bypasses the cooling setup and dumps onto another 30-inch conveyor feeding the aggregate-bin compartments. This same conveyor picks up the discharge from the cooling setup after the temperature of the aggregates has been reduced.

Cooling technique

The contractor is using a Croll-Reynolds Hightovac system, a jet-steam-vacuum process, to cool the sand and two sizes of aggregate, because job specifications require the placing temperature of the concrete mix not to exceed 60 degrees F.

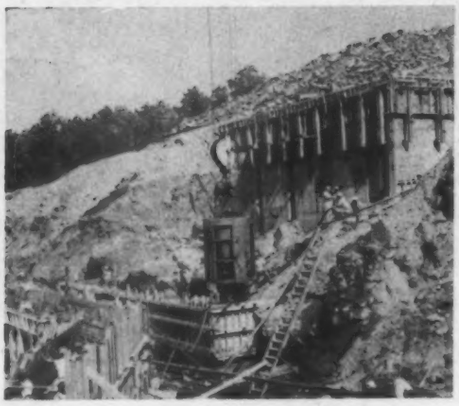
The Hightovac process consists of placing surface-wet material in a vacuum-tight container, to which the suction nozzle of a steam jet is connected. In this system, the water is the refrigerant, and it is in direct contact with the heat source—the aggregate. The compressor gradually lowers the pressure inside the tanks over a period of about 30 minutes until the absolute pressure is at .25-inch mercury. During this time, the

(Continued on next page)



During warm weather, when the cooling system did not have enough capacity, crushed ice was fed to the mixing water at the Johnson plant. The workman loads a crusher that feeds a bucket elevator leading to the water weigh batcher.

(Continued from preceding page)



Concrete is placed for a monolith that straddles a temporary channel carrying excess river water that cannot be handled by the temporary pipeline.

temperature of the aggregate drops from 80 degrees F to about 35 degrees F. This setup was sufficient, generally, to maintain the temperature of the concrete within a safe range during placement. When temperatures ranged over 85 degrees F, the installation did not have enough capacity, and crushed ice was fed to the water at the weigh batcher to maintain the temperature of the mixing water between 30 and 40 degrees F. This, and the vacuum process, resulted in a concrete mix having temperatures well below 60 degrees F. Ice was crushed at the base of the batch plant and transferred to the mixing-water weigh batcher by a bucket elevator.

The use of fly ash reduced the amount of portland cement required by about 30 per cent. Because this material is inert, it reduced the heat of hydration developed when concrete was placed.

Water for the plant is pumped from the river at a point just upstream from the dam. Two 7-stage pumps on a platform raise the water to the plant through a 12-inch-diameter line.

Since the water flowing in the river supplies the city of Newark, care was taken in the project's design to prevent contamination during the construction of the dam. Under a previous contract, a temporary 48-inch steel pipeline was extended 2,000 feet upstream from the dam to connect with the gatehouse of the existing small pond. This carries the water through the construction site. Downstream from the dam, the steel pipeline is connected to the permanent 54-inch reinforced-concrete conduit that is tied into the Pequannock Aqueduct supplying Newark.

The intake section of the dam will feed a permanent 54-inch-diameter steel conduit that will be connected to the existing reinforced-concrete conduit downstream. This connection will provide Newark with additional water from the new Charlotteburg Reservoir, which will provide additional storage of 2.98 billion gallons.

During the construction of the spillway monoliths, the temporary steel pipeline had to be moved from its original location to a steel trestle. This allowed crews to excavate for the spillway foundation. The trestle was required because the existing ground had been excavated at this point and the grade of the pipeline had to be maintained.

This temporary steel line will be filled with concrete and left in place inside the spillway monolith after the permanent 54-inch conduit is supplied through the intake structure. During work on the spillway monoliths, a diversion channel was formed between the bulkhead and the spillway sections so that water the temporary line could not handle would flow downstream.

This channel will be filled in with concrete before the reservoir begins to build up.

Personnel

The project is being directed for the city of Newark by George W. Andrews, director, Department of Public Works. Arthur J. Simpson, division engineer, Division of Water Supply, is in direct charge of the work.

Gene Berlanti is the superintendent on the job for Berlanti Construction Co. Joseph Goldbloom is the resident engineer in the field for Parsons, Brinckerhoff, Quade & Douglas, New York, N. Y., the design consulting engineering firm that is also supervising construction for the city of Newark. H. L. Kaufman is the project engineer at the firm's home office; William H. Bruce, Jr., is partner in charge. THE END

HOW TO SAVE TIME AND MONEY

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For more facts, use Request Card at page 18 and circle No. 320



Workmen lay in Slabform in construction of floors for a warehouse. The contractor reportedly saved 38 days through the use of these galvanized-steel forms.

Case history

Steel forms for floors net 30 per cent saving

I. Reindollar & Sons, Inc., York, Pa., contractors, report a saving of approximately 30 per cent through the use of Bethlehem Steel extra-heavy-duty galvanized steel Slabform in place of conventional wood forms in laying floors for the new warehouse they constructed for the Cole Steel Equipment Co. in York.

In addition to this saving, Reindollar says, the firm was able to reduce the time element for the entire project by 38 days, due to the speed of erection of Slabform and through not having to strip forms.

For further information write to the Bethlehem Steel Co., Dept. C&E, 701 E. Third St., Bethlehem, Pa., or use the Request Card at page 18. Circle No. 66.

Case history

Prestressed tie beams money-savers in Texas

In the construction of two high schools, a Texas contractor was faced with the problem of erecting laminated wooden arches with a span of 180 feet. The company reports that considerable money and time were saved by using prestressed tie beams supplied by the Prescon Corp.

The base plans called for 2-inch-diameter steel tie rods with turnbuckles and an elaborate system of deadmen to take care of erection and staged stressing of the ties. The savings were realized by replacing this system with a simple prestressed tie beam from abutment to abutment.

Prescon points out that a prestressed tie beam is a natural solution to a problem of this type since the entire stress can be placed on the tendon prior to erection, eliminating all staging. Because the slenderness ratio is of no consequence in prestressed concrete, the tie beam can be very small.

The contractor was D. W. Marshall Construction Co., Victoria, Texas.

For further information write to the Prescon Corp., Dept. C&E, 905 Navigation Blvd., Corpus Christi, Texas, or use the Request Card at page 18. Circle No. 64.

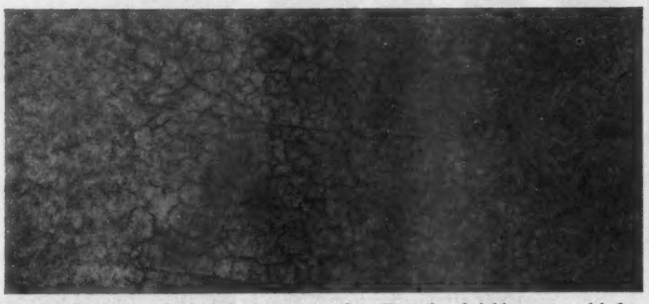


Case history: The Clarewood Construction Co., of Berkeley, Calif., reports substantial reductions in both costs and time after adoption of a Yale 15,000-pound-capacity G-3 lift truck as an "elevator." By using the G-3 to hoist tapered steel trusses with wood purlins and prefabricated plywood panels to roof level, where the materials were used for roof framing, much extensive and time-consuming hand carrying was eliminated. The method is shown in use during construction of the Crane Hoist Engineering Co. plant in San Leandro, Calif. For further information write to **The Yale & Towne Mfg. Co.**, Dept. C&E, 11000 Roosevelt Blvd., Philadelphia 15, Pa., or use the Request Card at page 18. Circle No. 150.

ALPHA news and notes from the field

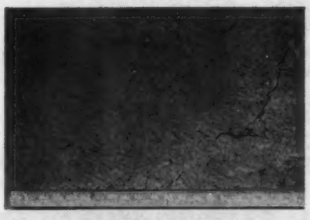
BETTER CONSTRUCTION THROUGH BETTER USE OF CEMENTS

How to Avoid Crazing in Concrete Surfaces



CRAZING or map-cracking of a concrete surface. Excessive shrinking occurred before sufficient strength had developed to resist the shrinkage forces.

Crazing cracks which appear on the wearing course of concrete are superficial cracks that rarely penetrate deeply. They are caused by surface shrinkage resulting from improper finishing practices and/or inadequate curing.



PLASTIC SHRINKAGE CRACKS are often confused with crazing. Condition shown above occurs soon after or during finishing and results from early loss of mix water to dry subgrade, dry aggregates or to the air. They are much deeper and more widely distributed than crazing cracks.

Effect of Slump

The higher the slump, the greater the danger of over-troweling and bringing excessive fines to the surface of the concrete. High-slump concrete is also severely affected by improper curing. In general, it increases the probability of surface problems including crazing.

Dusting on Sand or Cement



The practice of dusting on dry cement to hasten drying and make finishing easier should *not* be followed. This produces a rich cement mortar wearing surface which will craze and very likely scale.

To confirm this, Alpha laboratory technicians made two slabs of the same concrete mix. The first sample was finished according to recommended and accepted practices and produced a smooth, hard, crack-free surface. In the second sample, dry cement was dusted on the surface, and it was not properly cured. This slab was not over-troweled. The results on this sample showed a perfect example of surface crazing.

Inadequate Curing

Inadequate curing causes the surface to dry faster and therefore to shrink faster than the bulk of the concrete. This produces a difference in movement at a time when the concrete wearing surface has attained little strength, resulting in hairline pattern cracks.

Proper Curing Practice

Proper treatment of the concrete after it has been finish troweled is most important in obtaining a smooth, hard, durable wearing surface.



1. Concrete must be kept moist so that cement hardens while continuing to combine chemically with the water.

2. Start curing process after finish troweling as soon as the surface is hard enough to resist damage.



3. Don't allow concrete to air-cure.



More Information

Send for the Alpha Craftsmanship in Concrete Folder #1 which presents much more data on "Steel Trowel Finishing". Reprints of this advertisement are also available on request.

ALPHA
PORTLAND CEMENT COMPANY
Alpha Building, Easton, Pa.

For more facts, use Request Card at page 18 and circle No. 321



A pile-supported ramp for an American Model 300 motor crane is one of the contractor-devised methods for simplifying—and economizing on—a box-girder bridge in Kansas City, Mo. The ramp keeps the 25-ton rig out of the muddy area beneath the span as it places a Sonotube form around column steel. Falsework is also on piling.

Cost-cutting ideas for box-girder bridge

Like most alert contractors, Interstate Construction Corp. of Kansas City, Mo., is always looking for ways to cut construction costs. Generally, their men come up with good ideas.

Some of these were put to use on a box-girder bridge in Kansas City. Although the methods were not spectacular, each contributed to the overall efficiency of the job. Here's the way the job was done:

Interstate designed and built its own inexpensive jacks to adjust the deck forms.

To cut handling costs, the firm used 2×8-foot sheets of plywood instead of the standard 4×8. (One man can conveniently carry two 2×8 sheets; while it takes two men to carry one 4×8 sheet.)

To get maximum re-use of the forms, Interstate bought plastic-coated plywood. After 15 re-uses, the plywood still produced a good surface on the concrete.



The American uses the ramp to swing a 1-yard bucket of concrete from a Rex 6-yard mixer on a White truck to the column form. The ramp is at ground level on the uncut side of the bridge; three bents of timber piling support I-beams decked with 12×12 timbers.

Sonotube fiber forms saved forming costs on the circular columns.

Faced with muddy working conditions under the bridge, the contractor built a pile-supported ramp at the center of the bridge structure. A crane worked efficiently from the ramp to handle forms and place concrete.

UNION



The *Live Wire Rope Organization

**Charged with creative energy*

To be dubbed "live wire" by customers is nice. But it also is a warning signal which alerts our organization to stay alive to the fact that a greater output of creative energy is necessary when you're in front running position.

In the Union research laboratory and in those of the steel producing organization in which Union is integrated, technicians are hard at work on many new projects. They were started and will be finalized in the field where Union engineers spend more time than in the laboratory.

Classic example of what results from such deep and constant probing is the Tuffy family of wire ropes and slings, each one of them engineered to a specific job. Among 1600 standard wire rope constructions, in day to day production, none could be classified as the ultimate low cost wire rope for bulldozers, draglines, scrapers or hoisting equipment. One by one new metallurgical specifications and rope and sling constructions were tailored to meet the different but tough operating conditions inherent in the jobs these machines perform.

Tens of thousands of applications have established the unchallenged supremacy of Tuffy special purpose wire ropes and slings.

Tuffy Wire Ropes and Slings are "Job Prescribed" for Tough Jobs



Tuffy Balanced Dragline Rope



Tuffy Balanced Scraper Rope



Tuffy Balanced Dozer Rope



Shop-made jacks, costing about $9, have their height controlled by nuts resting on the bottom plate. Four threaded rods, welded to the top plate, pass through holes in the wood block as the jack is lowered.



A carpenter adjusts the jack to raise the height of an H-beam. A wood block on the top plate of the jack has been inserted to gain a little height. Note the 2×4 that is banded to the top of the beam.



Plastic-coated plywood sheets are cleaned by a workman on the plywood deck of the bridge itself. Decking is formed with 2×8 sheets that are easy for one man to carry; two men are needed for the 4×8 size.

Four-span bridge

The bridge itself is typical of the many box-girder bridges that the state highway department is building to cross the expressways in Kansas City. The 4-lane bridge carries Prospect Avenue over the depressed Southeast Trafficway. This trafficway, which is still under construction, will tie in with the completed 6th Street Trafficway.

The bridge contains four spans of 52–75–75–52 feet. Each bent consists of two circular columns supported by H-beam piling. The 4-foot-deep box girders carry a 60-foot roadway flanked by two 5-foot sidewalks.

Timber piles support falsework

One of the early steps in the construction was that of setting up falsework—timber piling capped by 12×12 timbers—to support the deck. The timbers carried longitudinal steel beams that supported the wood joist and plywood deck forms. The adjustable jacks were placed above each pile, between the pile cap and the steel beam.

Contractor builds jacks

Recently changed state specifications for box-girder bridges require the use of adjustable jacks rather than wood wedges. Because of this new requirement, Interstate set out to build a simple and inexpensive jack.

It developed a screw-type jack that could lift up to 30 tons and adjust through a range of 3 inches. The jack cost only about $9 to build.

Basically, the jack consists of two ½-inch plates and four ⅞-inch threaded rods with nuts to fit. The 5-inch-long threaded rods are welded to one of the 10-inch-square plates to make a table-shaped piece. The threaded rods fit through four oversize holes in the second plate. Nuts bear on the second plate to make the adjustment. The second, or lower, plate sits on a block of wood with holes drilled in it beneath the threaded rods. The holes allow the rods to move up and down.

Perhaps the biggest problem on the job was rain. It was a wet season, and Interstate was caught at the bottom of a hole. The depressed expressway was cut out on one side of the bridge,



New steels are born at Armco

Mount Rushmore National Memorial in South Dakota small fissures in the sculptured faces of Washington, Jefferson, Lincoln and Roosevelt are being sealed with granite dust and white lead. Though the granite sculpture is estimated to last for thousands of years, this preventive maintenance will help the surfaces smooth and slow the natural erosion process. The insert shows how workmen are suspended on Union Wire Rope.



For "Live Wire" Service—
Look Up Your Union Distributor
In the Yellow Pages

When you get him on the wire, you're sure to get the best in wire rope and slings—plus service that helps you get from Union Wire Rope products all the quality and long life Union builds into them. Union Wire Rope Corporation, 2260 Manchester Avenue, Kansas City 26, Missouri.

Tuffy. Wire Rope Tips



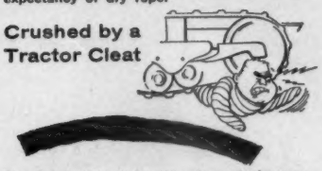
Guard Against These Killers!...Get the Full Measure of Service-Life Built In By Wire Rope Specialists.

Rusty Road to Ruin



Rust—No. 1 enemy of steel—takes a heavy toll in wire rope life. The one-strand break shown here resulted when the rope was allowed to become rust-bound through lack of lubrication. Tests show that properly lubricated rope has up to 10 times the life expectancy of dry rope.

Crushed by a Tractor Cleat



The Sunday punch for this piece of wire rope was delivered by a tractor cleat—just one of many crushing injuries caused by rope being run over or banged into by hard, sharp objects. Even the toughest wire rope is no match for this kind of mistreatment.

After a Suicide Jump



This rope jumped out of sheave and was soon destroyed by pulling around the shaft. Actually it was a case of sudden slack which threw the rope out of the sheave.

Burned on a Frozen Sheave



End of the line came quickly for this rope as the result of operating over a sheave that did not turn. Note the exceptionally heavy abrasion on one side of the rope. Sheaves should be checked thoroughly and often.

Would you like a copy of a booklet in which more than a score of Tuffy Tips like those above are reproduced. If so, write Union Wire Rope Corporation, 2260 Manchester Ave., Kansas City 26, Missouri.



y Balanced
gs and
t Lines



UNION Wire Rope

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company
Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Southwest Steel Products

2-C

For more facts, use Request Card at page 18 and circle No. 322

(Continued from preceding page)



One of the vice presidents of Interstate Construction—Wright Guinn—is the super on the job.

but not on the other. Water drained down the expressway and built up in the natural basin beneath the bridge.

To drain the water, the contractor laid two 4-inch tile drainage lines in rock-filled trenches. The drainage lines led to a sump that was pumped out by three ⅓-hp submersible pumps. The water was discharged to a city storm drain.

Crane works from ramp

In spite of the drainage system, the area under and around the bridge was generally muddy, making it difficult for equipment to operate.

The superintendent decided to get out of the mud by building a ramp in to the center of the bridge. This could be easily done by running the ramp from ground level on the uncut side of the bridge. The 50-foot ramp was built using three bents of timber piling. These supported I-beams decked with 12×12 timbers.

The ramp proved a convenient place to station the company's American Model 300 motor crane. The 25-ton rig handled materials and placed concrete in a large section at the middle of the bridge. The operator of the crane was located high enough so that he could always see what he was doing.

Personnel

Wright Guinn superintended the job for Interstate. The resident engineer for the state highway department is H. S. Jordan.

Firestone plans expansion

■ A $120 million construction and modernization program is now underway by The Firestone Tire & Rubber Co., Akron, Ohio, to increase its world-wide production facilities.

New tire plants are under construction in Calgary, Alta., Canada, and Bethune, France. Synthetic rubber plants are planned for Port Jerome, France, and Bareilly, India, and one is under construction in Texas.

Expansion and modernization programs are under way at all of Firestone's U. S. tire plants and are scheduled for completion this year. Foreign plants to be modernized and expanded are in Brentford, England; Buenos Aires, Argentina; Sao Paulo, Brazil; and Valencia, Venezuela.



Completely new design uses simple turbine wheel for power.

NEW VIBER

TURBOVIBER®

Powerful, dependable, high speed, form vibrator for concrete casting yards

10,000 rpm. Exerts over a ton of force.

No motor lubrication. No sliding friction. Minimum maintenance.

Only one rotating assembly. Long life.

Always starts. No vanes to stick.

Drastically reduced operating costs.

Convenient mounting clamps for easy attachment to any form.

For additional information, see your Viber dealer or write Viber Company, 726 South Flower Street, Burbank 21, California.

VIBER CO. Viber Vibrators

Pioneers and leaders in the manufacture of vibrators

For more facts, use Request Card at page 18 and circle No. 323

Case history

Radio failure minimized with transistorized units

The installation of extensively transistorized Motrac 2-way radios in 18 vehicles owned by the Erie Paving Co., Inc., of Buffalo, N. Y., is reported to have slashed radio downtime, as well as effected a considerable saving in maintenance costs.

Radios were installed in six dump trucks, a tank truck, a road grader, an engineer's panel truck, two tractor-trailers, two service vehicles, and in the cars of five supervisors. Each unit provides 20 watts RF power output.

The company reports that the use of 2-way radio has consistently saved man-hour time, reduced mileage expenses, drastically cut equipment downtime, and provided greater overall control of operations.

For further information on Motrac radios, write to Motorola, Inc., Communications and Industrial Electronics Division, Dept. C&E, 4501 W. Augusta Blvd., Chicago 51, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 44.



A dispatcher for the Erie Paving Co., with a record of truck locations, transmits an order to the vehicle closest to the site of request.



. . . and for

NEARBY SERVICE on Black & Decker tools. Black & Decker maintains 50 factory service branches plus authorized service stations to give your B&D tools the attention mechanical products need periodically. Keep your B&D tools in top condition, on the job all the time.

Only factory parts and factory-approved methods are used. Fast service and reasonable cost, always.



SWIFTY SERVICE says be sure to ask about FREE TOOL INSPECTION no cost, no obligation.

STANDARD B&D GUARANTEE after completion of all recommended repair work.

You'll find the location of the nearest B&D repair facility in the Yellow Pages under "Tools-Electric," or write for address to: THE BLACK & DECKER MFG. CO., Dept. 1306-S, Towson 4, Md.

50th YEAR

See Tools-Electric—Yellow Pages for Service & Sales

Black & Decker

Quality Tool Service



Case history: Uni-Form panels met the challenge of forming a crazy-quilt pattern of wall sections required for a large riverside warehouse built for General Mills in Buffalo, N. Y. A network of interior walls created trapezoid-shaped areas that posed a problem in forming wall intersections. The modular design and adaptability of the Uni-Form system permitted forming operations to proceed on schedule. Contractor: Johnson, Drake & Piper, Inc. For further information write to the **Universal Form Clamp Co.**, Dept. C&E, 1238 N. Kostner Ave., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 53.

Case history

Hydraulic pipe cutter handy on culvert project

Wheeler hydraulic pipe-cutting equipment came to the aid of a contractor handling a culvert project for improved flood control in Lyndhurst, Ohio. The prime contractor was the Shaw-Comer Corp., of Cleveland, and the water-main relocation was handled by the Ideal Plumbing & Heating Corp., of Cleveland Heights.

A 30-foot section of the original water-main installation had to be diverted under the floor of the culvert being constructed. The water was shut off in the immediate area, and a maximum of 8 hours was allowed for the complete job of cutting, rerouting, and reassembling the entire section.

The pipe was 16-inch-diameter Class 250, and the Wheeler heavy-duty hydraulic cutter—"boosted" with the Wheeler hydraulic auxiliary unit—was used for the job.

In spite of inclement weather conditions, the entire job was completed well within the prescribed time limits. According to the subcontractor handling the job, he would not have accepted the work if the cutter had not been available.

For further information write to the Wheeler Mfg. Corp., Dept. C&E, Box 688, Ashtabula, Ohio, or use the Request Card at page 18. Circle No. 54.

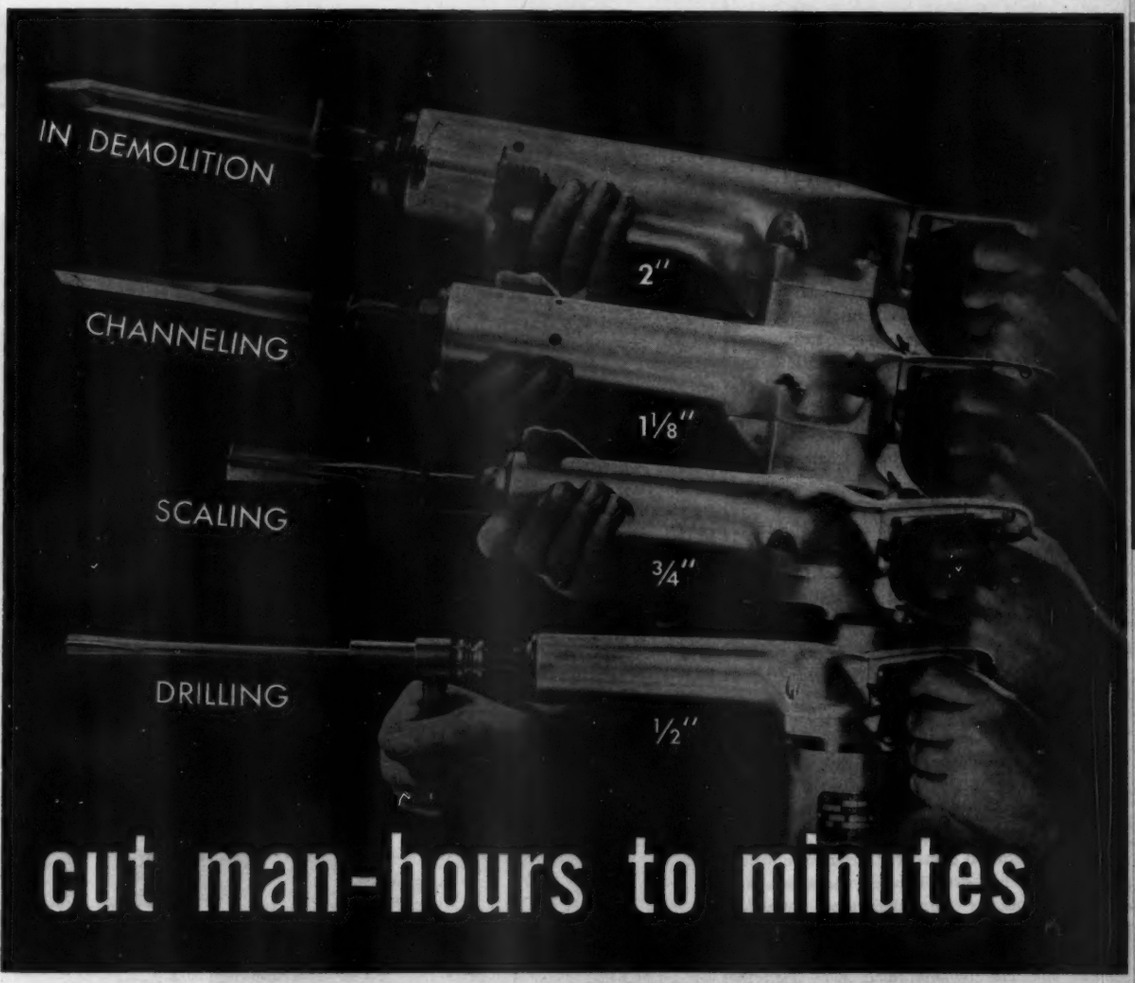
New section offered for welding handbook

The third section of the fourth edition of the "Welding Handbook" has been published by the American Welding Society. The cloth-bound, 512-page volume, "Miscellaneous Metal Joining and Cutting Processes," has 335 illustrations, 78 tables, and a comprehensive index.

Subjects new to this edition of the handbook include adhesive bonding, welding of plastics, and ultrasonic welding. The book covers special welding and metal joining processes, as well as arc and oxygen cutting processes.

Copies are available at $9 each from the American Welding Society, 33 W. 39th St., New York 18, N. Y. A descriptive leaflet may be obtained free of charge.

For more facts, use coupon or Request Card at page 18 and circle No. 324 ▶



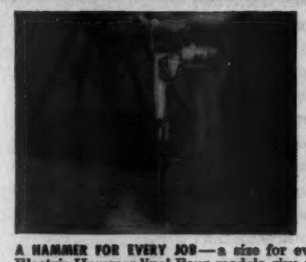
cut man-hours to minutes

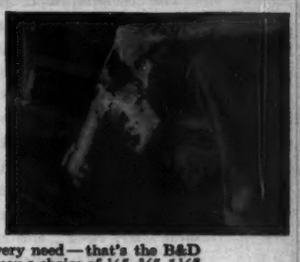
...with Black & Decker's Electric Hammer Line

2200 cutting blows a minute . . . that's how fast a Black & Decker Electric Hammer can break up masonry, scale weld splatter, channel in concrete or drill a hole. Man-hours drop . . . output soars! Every Black & Decker Hammer is *power-packed* to dish it out . . . *ruggedly-built* to take it . . . *user-designed* for easier operation. But see for yourself. Clip and mail this coupon NOW . . . or see your nearby B&D distributor. Four models, ¼" to 2" star drill capacity.

50th YEAR Leading Distributors Everywhere Sell Black & Decker®

QUALITY ELECTRIC TOOLS





A HAMMER FOR EVERY JOB—a size for every need—that's the B&D Electric Hammer line! Four models give you a choice of ¼", ¾", 1⅛" and 2" drilling capacity in concrete. And power-packed B&D Hammers' many *patented* features put them head and shoulders above the rest.

THE BLACK & DECKER MFG. CO., Dept. 1306
Towson 4, Maryland, (In Canada: Brockville, Ont.)
☐ Please arrange a demonstration of a B&D Hammer.
☐ Please send additional information on_____

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____

☐ Drills ☐ Sanders ☐ Screwgun® ☐ Bench Grinders



Prestressing setups for girders are located on both sides of the 3-span 470-foot-long crossing of Oneida Lake near Brewerton, N. Y., one of the longest prestressed spans in the world. Twelve 147-foot-long cantilevered end girders support the 231-foot-long drop-in center-span girders, all of which are prestressed on the site. The batch plant is on the north approach, background.

Construction of one of the world's longest prestressed-concrete spans is helped by plan for

Prestressing girders

methods



Construction of one of the world's longest prestressed-concrete bridges —a 3-span 470-foot-long twin structure that will carry Interstate Route 81 across Oneida Lake near Brewerton, N. Y.—was planned so that prestressing and erection operations could be carried out on both sides of the lake.

The bridge actually consists of two parallel structures, one for the three northbound and one for the three southbound traffic lanes of the route, which is also known as the Empire Stateway. The identical structures, supported by two common abutments and two common piers, have 320-foot center spans and 75-foot end spans.

Drop-in girders

Each structure consists of twelve 147-foot-long cantilevered end girders that support five 231-foot-long drop-in center-span girders. The I-shaped cantilever girders are about 15 feet deep between the abutments and the piers, then taper to about 8½ feet at the end of the 70-foot overhang.

The tee-shaped drop-in sections, weighing about 222 tons each, are about 8½ feet deep and have a top flange about 8 feet wide. These sections were floated to the center of the bridge and raised into position between the cantilevers. In final position, the drop-in sections overlap the cantilevers by 25 feet on each end.

Terry Contracting, Inc., Long Island City, N. Y., the contractor on this $1,967,863 project, set up job equipment—including machinery at three casting locations and an automatic concrete batch plant—on the abutment approaches.

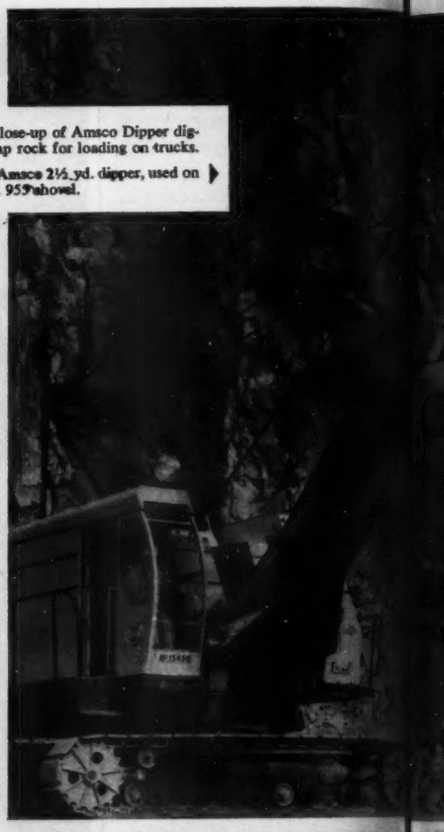
On the south approach, Terry set up a yard to cast and post-tension 12 of the 24 cantilevers. On the north approach fill, where the concrete batch plant was installed, two casting areas were built for the remaining 12 cantilevers and the 10 drop-in center sections.

The contractor was equipped with



Left: Close-up of Amsco Dipper digging trap rock for loading on trucks.

Right: Amsco 2½ yd. dipper, used on P. & H. 959 shovel.

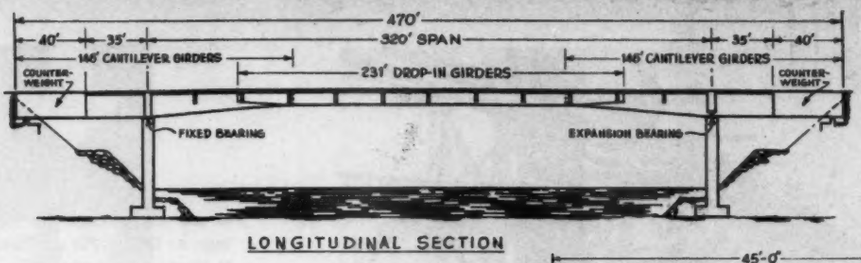




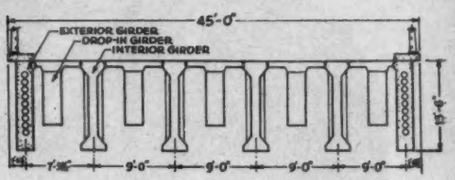
Left: Amsco 2½ yd. dipper equipped with Amsco Simplex 2-Part Teeth, used for rock digging and loading at quarry.

Right: Special pin lock assures positive locking of reversible tip on Amsco Simplex 2-Part Teeth.





LONGITUDINAL SECTION



CROSS SECTION

Cantilever girders are of two types: outer girders are rectangular with nine 9-inch Sonovoids in the webs, while the four inside girders are modified I's. Drop-in girders were lifted into place from a barge. Tees are joined to cantilever girders by a 7-inch concrete-deck closure strip and post-tensioned diaphragms. The wearing course is hot-mix.

ers bridge approaches

two sets of interior cantilever girder forms, one set of exterior cantilever forms, and two sets of drop-in girder forms. They were all fabricated in a building at East Syracuse, N. Y., and shipped to the bridge site.

The cantilever forms were made with a 2×6-inch tongue-and-groove sheeting backed with 2×6-inch studs and double 2×6-inch wales. For additional strength, double 3×6-inch wales were used along the bottom of the side forms for the girders.

The drop-in girder forms were made of ¾-inch plywood backed up with 2×6-inch studs and wales. Bottom pallets for the casting beds were installed on 6×6-inch timbers; for the tapered portion of the cantilever girders, the pallets were supported on timber posts.

Tendons Installed

Before setting the prefabricated side forms in place on a casting bed, crews installed the post-tensioning tendons and conduits. Ryerson supplied the 2⅜-inch-diameter flexible conduits with the ¼-inch steel wires already installed. Up to 28 wires with end fasteners were used per tendon. The tendons were shipped in racks for easy handling at the site.

Each interior cantilever girder has 28 tendons; each exterior, 20 tendons; and each drop-in girder, 12 tendons. The tendons are located throughout the girders to follow the lines of maximum stress. They were positioned and held in place with a tolerance of ¼ inch. In addition to the longitudinal stressing units, 6 and 8 tendons were placed from the bottom and center of the cantilever girders, extending upward and outward through the sides to be later used for structurally tying girders into the principal diaphragms that support the bridge at the piers.

After the tendons were positioned and the reinforcing steel installed, the side forms were erected and braced in a vertical position. Using about 18 towers equipped with hoppers and chutes, Terry placed the concrete mix through two levels of windows in the timber forms. The concrete was handled by crane and bucket. Transit-mix trucks were used to haul the mix from the batch plant to the concrete buckets.

A total of 12 Master motor-in-head electric vibrators, with 1¾-inch-diameter heads, and three Homelite vibrators handled the consolidation

◀ For more facts, use Request Card at page 18 and circle No. 352





More proof that...

AMSCO HELPS YOU MOVE MORE TONS PER DOLLAR

Read about the actual experience of a large New England quarry with Amsco Dippers and Simplex 2-Part Teeth*

"WE HAVEN'T WORN OUT AN AMSCO DIPPER IN 5 YEARS"

This, in the words of the quarry superintendent, sums up his experience with Amsco Manganese Steel Dippers. It's rugged work, all in rock, as you see from the pictures at the left. Shovel and dipper are used to load trap rock onto trucks for transportation to the crushing plant.

The Amsco Dipper was installed because the superintendent had used them before, and knew their reputation for long life under tough digging conditions. Experience is proving him right . . . again.

SIMPLEX TEETH HANDLE 25,000 YDS. OF ROCK BEFORE REPLACEMENT

At this same quarry, Amsco Simplex 2-Part Teeth are giving 120 hours' service . . . handling 25,000 to 30,000 yards of rock . . . before replacement is necessary. That's considerably longer service than has been obtained from competitive 2-part teeth, the quarry superintendent states.

Not only is the wear-life of these teeth exceptional, but operators like the ease of replacement, and the fact that the tips stay on without trouble.

For further information on Amsco Dippers or Simplex 2-Part Teeth, see your power shovel equipment dealer, or write to Amsco for technical bulletins showing sizes, types and application data. *Patent No. 2,904,908.

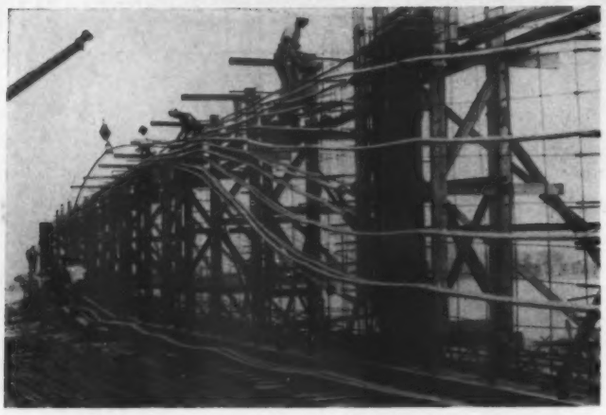
AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

Other plants in: Denver • Los Angeles • New Castle, Dela. • Oakland, California • St. Louis
In Canada: Joliette Steel and Manitoba Steel Foundry Divisions

For more facts on insert, use Request Card at page 18 and circle No. 328



Post-tensioning tendons, supplied by Joseph T. Ryerson, are being placed for one of the cantilever girders. It took three days to position forms, four to place tendons and reinforcing, and one to cast girders. One day was used for the tensioning operation.

(Continued from preceding page)

of the mix through the form openings. As the level of the concrete rose in the forms, the lower form openings were closed, and placement continued through the upper level of "windows."

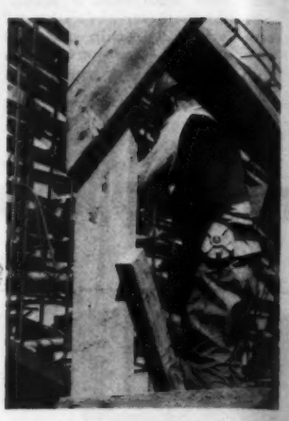
After placement was complete, concrete was cured by water for at least five days before the side forms were stripped. Before stressing could begin, concrete had to reach a minimum strength of 4,000 psi. The stressing operation started with the post-tensioning of the first 8 tendons with two 150-ton center-hole jacks.

During this phase, tendons were stressed to 100 tons each by jacks applied at each end. This resulted in a total elongation of about 14 inches. After this post-tensioning, the cantilevers were moved by hydraulic jacks onto steel dollies located at the center and end points.

Two 12-ton hydraulic jacks, each having a 5-foot-long ram, were connected to the center dolly to move the 240-ton cantilever from the approach fill to the end span. This was done by jacking against blocks fastened to the timber flooring of the steel track system and spaced on 4-foot centers. The center dolly rode on all four parallel tracks, which were made up of steel channel sections; the end dolly rode on the two outside tracks.

At the abutment and pier, additional tracks were laid perpendicular to the approach tracks so that the cantilevers could be moved laterally to their respective pier locations. A temporary steel span was used between the abutment and pier so that the cantilever could be rolled out.

Anchor rods were embedded into the tops of the pier and abutment to hold down the steel tracks necessary for the lateral movement of the cantilevers.



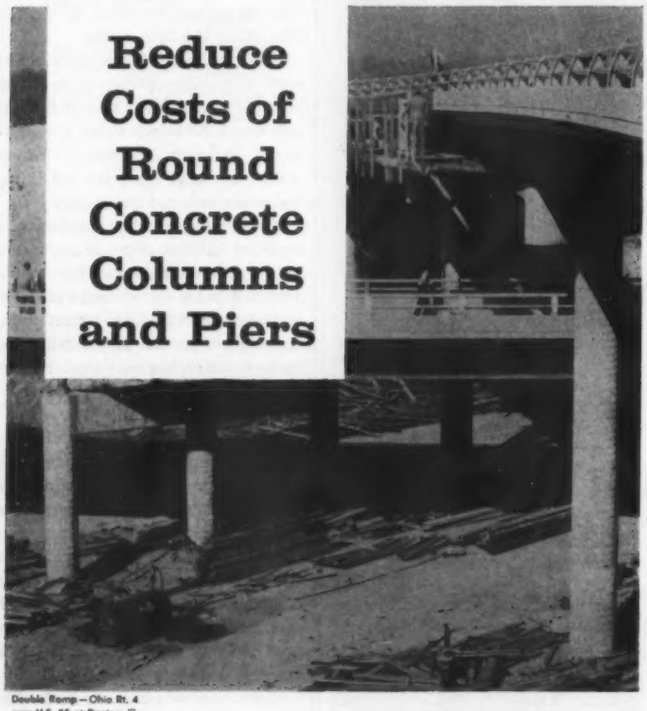
After tendons are positioned, reinforcing steel is wired into place. This workman, using a Cal-Tie wire-reel dispenser, ties the reinforcing.

Sand jacks

Since the cantilever girders were positioned atop temporary sand jacks located on the piers and abutments, supporting diaphragms could be cast in place over the piers and between the girders.

After the diaphragms were cast and post-tensioned, the permanent bearings were positioned. When sand was allowed to escape from the sand jacks, the girders were gently lowered onto the permanent fixed and expansion bearings over the piers.

The diaphragms were structurally tied to the girders by the arching transverse tendons embedded into the cantilever girder webs. Post-tension-



Double Ramp—Ohio Rt. 4 over U.S. 25 at Dayton, O. Contractor: Mason Construction Co., Dayton. Engineer: Howard Needles Tammen & Bergendoff, Kansas City, Mo.

Reduce Costs of Round Concrete Columns and Piers

Form them quicker, more economically with

SONOCO
Sonotube®
FIBRE FORMS

In today's vast highway building program, SONOTUBE Fibre Forms speed construction and reduce costs . . . by forming round concrete piers for bridges and overpasses faster and more economically than any other method.

With their light weight, SONOTUBE Fibre Forms handle easier, and are quickly placed, braced, poured and stripped . . . thus saving contractors time, labor, and money. Versatile too, these forms can be sawed for tie-in with other forms and punched for anchor bolts and dowel rods, or cut for utility outlets.

Use Sonoco SONOTUBE Fibre Forms wherever round concrete columns are specified—there's a type to fit your job requirements most economically: "A" Coated—for exposed columns; Seamless—for finished columns; or "W" Coated—for unexposed columns. Order 2" to 48" I.D., in standard 18' lengths or as required.

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Construction Products
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4757

For more facts, use Request Card at page 18 and circle No. 326

Jay Tampers provide "great savings" on Interstate Highway Construction Program



Thousands of Jay Tampers have been used coast to coast on the multi-billion-dollar Interstate Highway Construction Program. One contractor, Visintine & Co., Columbus, O., says:

"The work we did with Jay Tampers was approved by Federal, County and State Highway Inspectors, and we had great savings in time and money."

Savings on such jobs as the Niagara Power Project and the Air Force Academy are similar. In one case, compaction cost per cubic yard was cut from $2.68 to 12¢.

Even greater savings are now available with Jay's new models, which tamp harder, faster, better on all soils and blacktop. Improvements include stepped-up power, new handles, and a new trailer for easy transport.

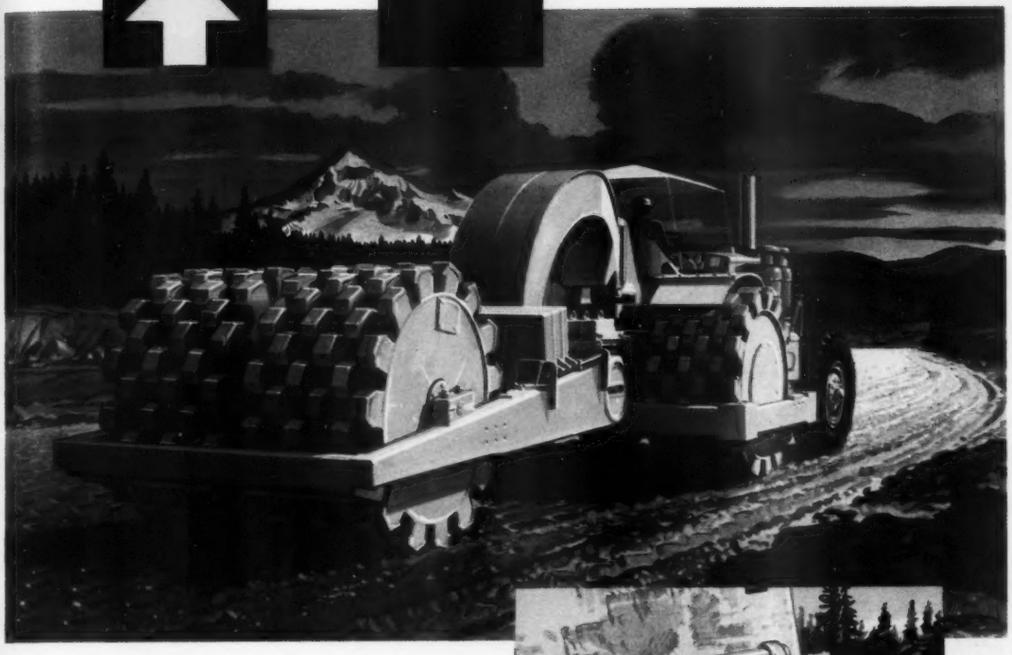
See your Jay dealer for a free demonstration, or send for Catalog J-0. Jay Company, Division of J. Leukart Machine Co., Inc., 2226 South Third Street, Columbus 7, Ohio.

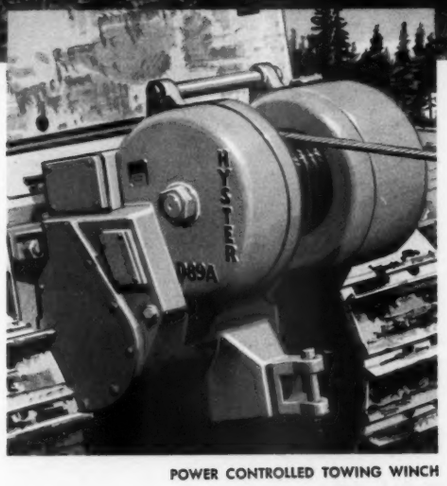
JAY tampers

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HYSTER

DW20A TAMPING COMPACTER





POWER CONTROLLED TOWING WINCH

The competitive edge for contractors...

HYSTER has it!



COMPACTION COSTS AS LOW AS 3¢ PER YARD with HYSTER HIGH SPEED COMPACTERS



DW20A Tamping Compacter rolls highway embankment.



Model D Tamping Roller compacts base course.

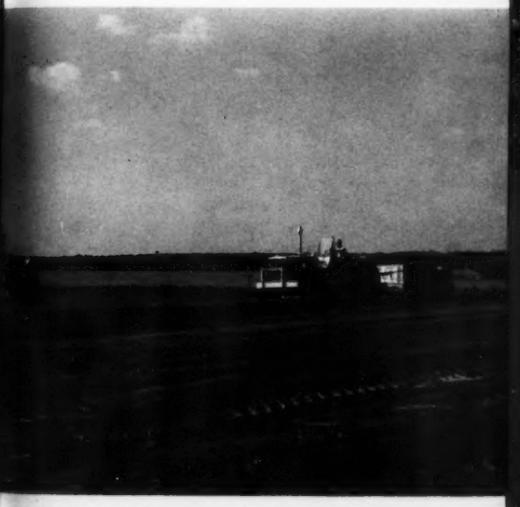
- **SPEED UP THE WHOLE JOB**
- **GET DENSITY AT LOWEST COST**
- **SELECT THE WHEEL TO MATCH THE SOIL**

Contractors using Hyster High Speed Compacters with either "GRID" or Tamping wheels can depend on the high production needed to bid safely at competitive figures.

"GRID" wheel also crushes pit-run rock at lowest cost.



Model D "Grid" Roller crushes pit-run river rock.



Model D "Grid" Roller compacts highway embankment.



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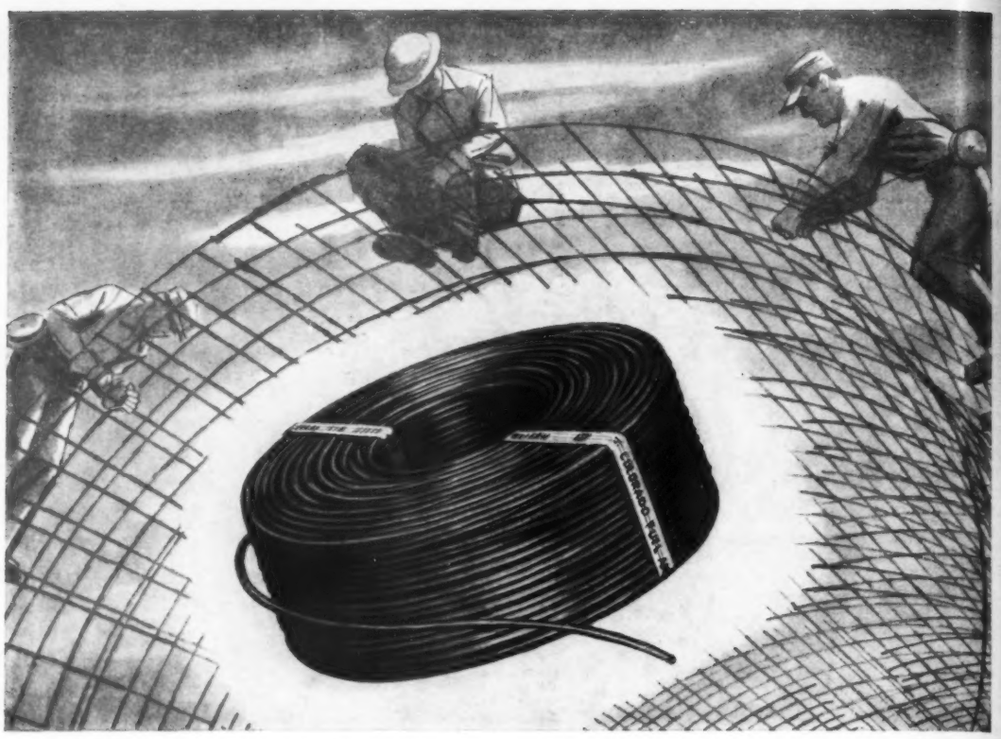
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TRACTOR & EQUIPMENT DIVISION

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Tie more re-bars safely

...with Cal-Tie Wire in the handy reel

Still using the old-fashioned, shoulder-coil method for tying re-bars? Then it's time to switch to the *modern* way — Cal-Tie Wire in handy, light-weight dispensers. Your crews will be able to tie more re-bars per hour . . . in greater safety . . . resulting in a lower per-ton cost for placing steel.

Designed to be worn on the belt — on either the right- or left-hand side — the Cal-Tie reel is always within instant reach, yet never in the way. Because it frees both hands for productive work, tying is faster and more accurate. Wires can't get tangled or kinked . . . can't be left underfoot to cause falls . . . can't cause dangerous eye or facial injuries. And, because the wire is used in a dispenser, less is thrown away as unused ends — waste is kept to a minimum.

Together, Cal-Tie Wire and the handy dispenser make a valuable cost cutting team that weighs only approximately five pounds. Cal-Tie Wire — the safe, sure way to secure re-bars — comes tightly coiled, 20 coils to the carton, to save you storage space. It's available in stock in 16 gage, annealed or galvanized; other sizes 14-20 gage upon request. For complete information, call your nearest CF&I dealer.

7804

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CF&I STEEL

For more facts, use Request Card at page 18 and circle No. 329



A completed 147-foot-long cantilevered girder waits to be moved into place. Before the move, 8 tendons are stressed to 100 tons each for a total elongation of 14 inches. The moving operation takes 1½ days.



One of the 240-ton cantilevers is moved from the approach fill to the end span by jacks working against blocks fastened to the timber floor of the steel track system. At far left, drop-in girders are being cast. Girders are guyed with 1-inch steel cables to keep them from tipping.

ing was done after the diaphragms reached a 4,000-psi strength.

Work sequence

These were the steps followed in the operation:

1. Cast cantilever girders and accomplish Stage 1 prestressing prior to moving.
2. Cast, prestress, grout, and cap drop-in girders.
3. Place cantilever girders into final position bearing on temporary sand-jack supports.
4. (a) Place bearings. Form, cast, and prestress diaphragms.
   (b) Form and cast slab closure from diaphragm to a construction joint 43 feet 8 inches beyond center line of main bearing.
5. Simultaneously with step 4b, cast back portion of counterweight.
6. Perform Stage 2 prestressing of the cantilever girders and adjust stresses in Stage 1 units as required. Grout Stage 1 and Stage 2 prestressing units. Cap units at abutment end. Begin placement for back wall and wing wall of abutments.
7. Erect drop-in girders. This is done by floating these sections on a barge to the center of the span and jacking them into place.
8. Perform Stage 3 prestressing in cantilever girders. Grout Stage 3 units, and cap all units on projecting end.
9. Place concrete in remainder of counterweights.
10. Place and prestress additional diaphragms and place concrete for the slab between diaphragms.
11. Place concrete for diaphragm and slab closures for drop-in girders and prestress diaphragms in uniform increments in the longitudinal direction across the full width of the bridge.
12. Place concrete for remainder of curb on exterior drop-in girders.
13. Place expansion dams and concrete for the tops of abutments.
14. Bring approach fill to grade and backfill behind back wall and wing walls.

(*Continued on next page*)

TRIAL SAMPLES

Of World-Famous WHITMORE'S Lubricants NOW IN AEROSOL SPRAY-ON CANS!



HANDI-LUBE LIQUID GEAR COMPOSITION

For open gears, sliding surfaces—exclusive formulas eliminate metal to metal contact, keep wear on the lubricant not the metal—no breakdown even after prolonged use under water—available for every climatic condition—packaged in handy 16-oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.



WIRE ROPE SPRAY LUBRICANT

Exclusive formulas for lubricating and protecting wire rope, chain, springs. Penetrates to the core of wire rope minimizing internal friction and increasing usable life up to 300%—special protective qualities absolutely eliminate corrosion—non-gumming qualities reduce "carry-back"—packaged in handy 16 oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

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- Open Gears, Dipper Sticks, Cams
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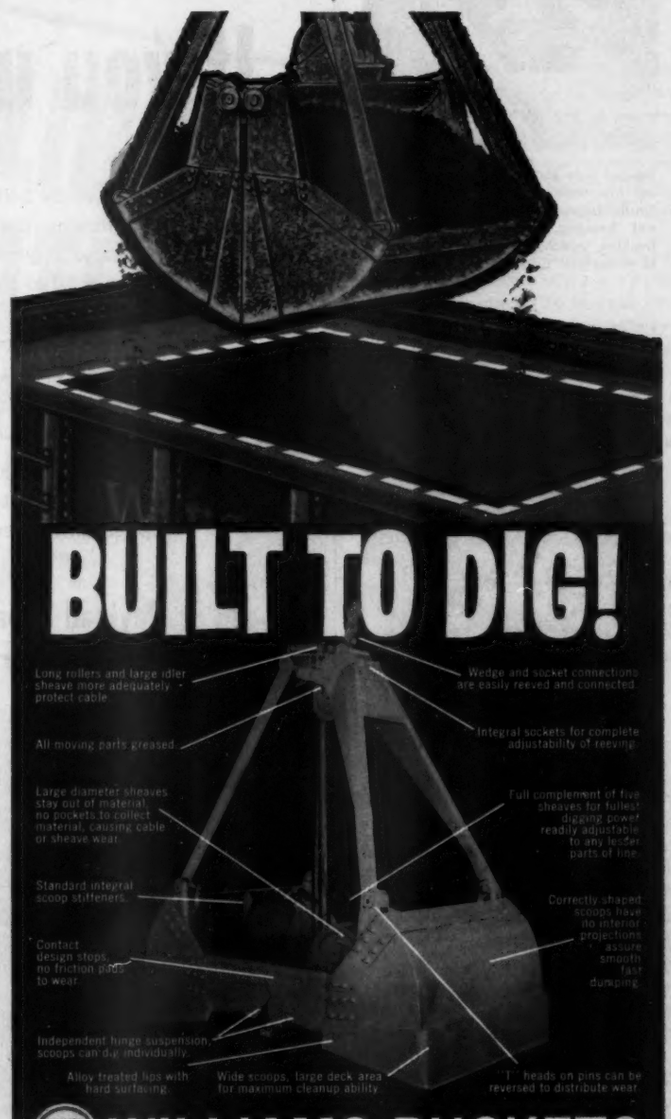
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THE WHITMORE MANUFACTURING CO.

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CLEVELAND 4, OHIO, U.S.A. PHONE: VULCAN 3-7272

For more facts, use Request Card at page 18 and circle No. 330



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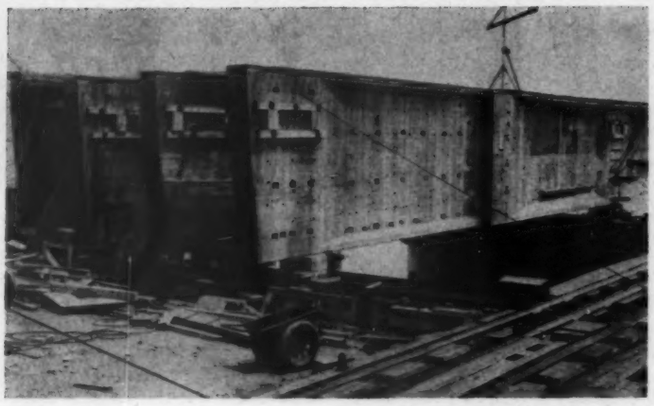
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Once a girder has been moved out over the abutment and pier, which are connected by a temporary steel bridge, it is moved along additional tracks, perpendicular to approach tracks, to its pier location. Cantilevers are supported by sand jacks while shoes and rockers are placed.

(Continued from preceding page)

15. Place asphalt, railings, and lights.

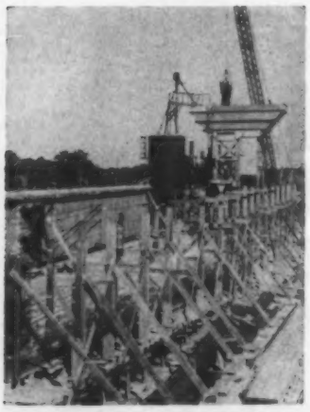
Batch plant

Over 13,000 cubic yards of concrete for the job was turned out by the Terry-built batch plant on the north approach fill. It consisted of a 600-barrel cement silo that stored the Alpha portland cement, and a 140-ton, 4-compartment bin that included an enclosed cement compartment.

Plastiment was used in the mix to keep concrete plastic and prevent cold joints, achieve workability of the concrete without using excessive



Timber side forms for cantilever girders are readied for concrete on the south approach fill. Note the diagonal bracing, equipped with turnbuckles, which holds these side forms in a vertical position.



While a form is being prepared for a cantilevered girder, foreground, another is ready to be moved out. Timber supports are used for the tapered portion of the cantilever. The steel bearing plate with holes for post-tensioning tendons is in place. In the background, a Manitowoc crane charges the aggregate bin of the contractor-built plant.



An Austin-Western hydraulic crane is used around the casting site for such lifts as this 5-foot-stroke 12-ton jack, and for other lighter lifts.

If you use rear-dump haulers...

Backed by better than 25 years of specialized experience in building off-highway earthmoving equipment exclusively, Euclid's modern rear-dump line incorporates advanced engineering that is a result of unmatched field experience. From the 10-ton Model R-10 to the big 55-ton "Euc" with two engines and a total of 672 h.p., Euclid Rear-Dumps are job proved to meet today's requirements for big performance. This greater dimension... in range of capacities, in choice of engines, transmissions and tire sizes, and in type of hauler... and in parts and service facilities of a world-wide dealer organization, too... can mean lower hauling costs and more work-ability on every one of your rear-dump jobs.

Have the Euclid dealer in your area give you facts and figures to compare with your own hauling costs... you'll find Euclid's greater dimension pays off in a better return on your investment. EUCLID Division of General Motors • Cleveland 17, Ohio

Payload capacities of 10, 15, 18, 22, 27, 40 and 55 tons... also semi-trailer models of 12, 22, 35 and 50 ton capacity.







When you compare Rear-Dump Haulers, check these 7 points...

- is maker experienced in the field... known for building a dependable, well-engineered product?
- does machine have required performance ability needed... capacity and speed for high production work, power and traction for rough going and steep grades?
- well-balanced for size of loading equipment... hoppers and controlled dumping needs?
- is there good parts and service availability... at both manufacturer and dealer level?
- are maintenance manuals, parts books and service literature complete... is machine designed for easy servicing?
- is machine easy to operate... convenient controls... good visibility... operator comfortable so that efficiency is maintained for entire shift?
- can required production be maintained at low cost... construction rugged enough to withstand heavy service with minimum maintenance?

Euclid Rear-Dumps meet every one of these important requirements... and more!

amounts of water, and accelerate strength gain. The proportion of Plastiment used was varied to obtain uniformity of concrete as air temperature changed, and to produce a mix with a slump of 5 inches.

The plant was equipped with two Worthington 1-yard mixers that dumped into a skip after the 2-minute mixing cycle. The skip was raised by an American hoist and concrete dumped to a hopper that charged the transit-mix truck. Howe electronic scales and controls made plant operation completely automatic, even to adjusting for the changing moisture content in the aggregate.

Terry had four cranes on the project—a Manitowoc 3000B, a Lorain and a Koehring truck-crane, and a Lima 55-ton crane—to handle the charging of the aggregate bin, positioning forms, concrete placing, and other lifts. Two Austin-Western yard cranes moved the jacks and made other lifts around the casting sites.

Personnel

Lloyd Monroe was the superintendent on the job for Terry Contracting. Edward Olschewski was the resident engineer for the New York Department of Public Works. Summers, Munninger, & Molke, Albany, N. Y., was the consulting engineering firm.

THE END



Two Cedarapids pavers cover a 27-foot-wide roadway in one pass by moving in echelon formation.

Case history

Two bituminous pavers establish new record

The Kingston Bituminous Products Co., of Kingston, N. J., used two Cedarapids pavers to complete the resurfacing job for U. S. 1 between Trenton and New Brunswick, and the New Jersey Highway Department reported that a new record had been established.

"On this job," states the company, "we had one paver laying a 13-foot mat and the other a 14-foot mat. We were able to make one pass with the two pavers operating in echelon, rather than three passes with our other pavers. With all the manholes on this job—36 per mile—we paved right over them, and the Cedarapids paver proved very flexible."

Also, because of the simplified controls, the operators reportedly did a better job and were less tired at the end of the day.

For further information write to the Iowa Mfg. Co., Dept. C&E, 916 16th St. N. E., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 141.

Engineering costs on federal projects

■ A 144-page report, "The Role of the Consulting Engineer in Federal Public Works Projects," has been prepared by the National Society of Professional Engineers from a survey of 1,464 engineering service contracts with 17 government agencies and bureaus. It shows that the average fees charged by private engineering consultants on government projects are considerably lower than widely publicized figures.

Copies of the report may be had from the society, 2029 K St. N.W., Washington 6, D. C. They are $3 each; $1.50 for society members.

Vulcan Tool names new sales manager

■ William S. Withers has been appointed sales manager of Vulcan Tool Mfg. Co., Quincy, Mass. He was formerly with Barco Mfg. Co., Barrington, Ill., as assistant sales manager in charge of distribution in the northeastern states.

◄ For more facts, use Request Card at page 18 and circle No. 332



BIG POWER . . . BIG CAPACITY . . . BIG PERFORMANCE

Model R-27 has heaped capacity of 26½ yds. . . . rated payload is 54,000 lbs. . . . available with Cummins 335 h.p. or GM 336 h.p. engine . . . 4-speed Torqmatic Drive with converter lock-up and Torqmatic Brake . . . dual hydraulic booster steering . . . 18.00 x 25 tires on all wheels . . . rugged body with twin hoists . . . top speed with full payload, 34 mph. . . . available in two body types, standard for all-around use and quarry for hauling big rock.

ENGINEERED FOR EASY SERVICING

Like other Euclids, the R-27 is of simple, rugged design for years of dependable performance at minimum maintenance cost. When repair or replacement of major components is necessary, service-minded engineering saves time and money, too. For example, a transmission can be removed and replaced in just one-eighth the time required for the same work on a competitive hauler of the same capacity . . . engine replacement takes only one-half as many man-hours.

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE



Case history: On a recent job in Orlando, Fla., the Hubbard Construction Co., of Orlando, bid $1.25 per linear foot for valley-type curb and gutter of 24-inch base width. Through the use of a Smith-Field automatic curb and gutter machine, the firm estimates a production average of about 1,000 feet per day. The machine operates on an angle-iron track, at a speed of 5 to 6 fpm, without the use of forms. On this job, Hubbard used track 250 feet ahead of the rig, and picked it up and reset it as the machine moved along. For further information write to **Power Curbers, Inc.**, Dept. C&E, P. O. Box 1465, Salisbury, N. C., or use the Request Card at page 18. Circle No. 145.

Case history

Test rubber compound for rock-type retreads

A new rubber compound, designed for giant-tire rock-type retreads, received an extremely severe test on a job at Huntsville, Ala.

In the construction of a highway from Huntsville to Guntersville, the Burgess Construction Co., of Birmingham, graded, drained, and surfaced the road over rugged Monte Sano Mountain. The job calls for removal of 900,000 cubic yards of earth-rock, and laying 6,500 linear feet of concrete and metal pipe.

Providing retreading service for the giant 1400×25's and 1800×25's on the Burgess equipment is the job of the Southern Tire Co., of Sheffield, Ala. One of the few companies specializing in this service or equipped to handle giant tires up to 33.5×33, the firm provides nationwide on-site tire service to the construction industry. Fully equipped trucks and crews pick up and deliver at job sites, after work hours.



One of the Burgess Construction Co.'s giant tires is inspected by John Kelly, job superintendent. Pickup and delivery with 48-hour retreading service is being provided by the Southern Tire Co. on the Huntsville, Ala. project.

This kind of service has been of great help in minimizing downtime, according to Burgess. The contractor also lauded the durability of the new rock-type rubber used by Southern Tire in its retreads.

For further information write to the Southern Tire Co., Dept. C&E, 1414 Broadway, Sheffield, Ala., or use the Request Card at page 18. Circle No. 125.

Case history

Steel shoring is used as falsework for bridge

The first state-approved use in Minnesota of steel shoring to support the placing of bridge slabs was completed recently on the big interstate bridge that spans the Mississippi River at Red Wing.

Waco Hi-Load shoring, a heavy-duty steel scaffolding engineered for such applications, was used by the Industrial Construction Co., of Minneapolis, as falsework on a separation bridge extending from a Red Wing street to the main bridge span.

The Waco shoring consists of standard 4-foot-wide panels of high-carbon steel tubing, together with various types of shore heads, screws, staffs, and other accessories. Each panel is designed to carry a load of 20,000 pounds. On the job site, the panels, which come in 3, 4, 5, and 6-foot





"My General 2-3 Ton Roller INCREASED Production by 34%, DECREASED Labor Costs!"

***ELIMINATES HAND TAMPING:** "My General 2-3 Ton Roller works flush against building lines and curbs.*

This eliminates hand tamping completely! The General has increased production by 34% and decreased labor costs," says Richard (Dick) Palmer, owner of Palmer Asphalt Paving, Penns Grove, N. J. "I've also experienced a steady increase in business," continues Palmer, "because of the top quality work I can count on my General 2-3 Ton Roller to deliver."

SUPERIOR TO ROLLERS COSTING $600 MORE: "I have owned 2-3 Ton Rollers costing $600 more, but my General tops the best of them." Another feature of the General 2-3 Ton Roller that impresses Mr. Palmer is the Lifetime Guarantee on the compaction roll, standing behind it for life against damage and wear. As for maintenance and downtime problems: "I've had no maintenance costs or downtime in the two years I've owned the machine," he reports.

EASY TO OPERATE AND MAINTAIN: So easy to operate that anyone can master its controls within minutes. Push button electric starting, Link-Belt roller chain steering, automatic forward and reverse transmission, automotive type hydraulic brakes. Working parts are enclosed but easily accessible for maintenance. The General 2-3 Ton Roller has a turning radius of only 12 feet. Oversize water tanks and roll scrapers with imported cocoa mats are standard equipment. ALL THIS FOR A PRICE FAR BELOW ALL COMPETITIVE ROLLERS!

Also available in ½—1—3-5—4-6 Ton Models. Get the details today! Contact the Dealer nearest you or write, wire, or telephone direct; Dept. CE6-O.

Tilden 5-5400, Cable Address: Generong Thorofare, N. J., Dealer Inquiries Invited

GENERAL ENGINES

GENERAL ENGINES CO., INC., ROUTE 130, THOROFARE, NEW JERSEY

For more facts, use Request Card at page 18 and circle No. 397

heights, can be quickly and easily joined together in "towers" or combinations through use of Waco's Speedlock and steel cross bracing. On the Red Wing bridge, 120 such towers were in use.

Large adjustment screws on the top and bottom of each leg made final adjustments to exact height easy, although the bridge structure is an inclined bank.

The contractor states that the accurate fabrication of the Hi-Load shoring permitted it to be used efficiently without experienced personnel. This resulted in considerable savings in both labor and materials.



In the construction of the interstate bridge at Red Wing, Minn., Waco Hi-Load steel shoring, made up of standard 4-foot-wide panels, each designed to carry a load of 20,000 pounds, was used as falsework.

For further information write to the Waco-Porter Corp., Dept. C&E, 3565 Wooddale Ave., Minneapolis, Minn., or use the Request Card that is bound in page 18 of this issue. Circle No. 151.

Case history

Concrete rigs team to double paving production

The General Contracting Co., of Rapid City, S. Dak., increased paving production 50 per cent by teaming Maxon Dumpcrete bodies with Dumpcrete spreaders.

Using the central-mixing, nonagitated hauling method, the contractor completed 4.72 miles of 4-lane divided highway—two 24-foot-wide, 9-inch reinforced-concrete roadways on U. S. 281 at Aberdeen, S. Dak.—far ahead of schedule.

The firm reportedly saved so much time on this 35,000-cubic-yard project that it was able to handle two additional jobs totaling 19,000 cubic yards, during the same season.

At Aberdeen, 10 Maxon Dumpcrete bodies were used. They maintained steady deliveries from the central-mixing plant to two Dumpcrete spreaders heading a paving spread that also included three screed and finishing machines. The 90-second cycle of the spreaders from truck to slab kept concrete placement moving along at a fast hourly clip.

For further information write to the Maxon Construction Co., Inc., Dept. C&E, 2600 Far Hills Ave., Dayton 19, Ohio, or use the Request Card at page 18. Circle No. 46.

Case history

Drill saves 80 days on dewatering project

A series of 60 to 80-foot dewatering holes 16 inches in diameter had to be drilled to lower the water table prior to placing concrete for the Walter George Dam at Fort Gaines, Ga.

At first, this drilling was tackled by a cable tool rig. When drilling through a limestone formation, progress was at the rate of one completed well every 6 to 8 days. The engineers wanted faster production; they were also concerned by the fact that the churn drill tended to muddy the formation and seal off water.

To correct the situation, the Adams-Massey Co. was called in with its Stardrill-Keystone KF-50 rotary gun rig. With the KF-50, the remaining 13 wells were drilled, cleaned, and developed in 13 working days. The rig saved about 80 days on the 13 holes and at the same time solved the problem of water shutoff.

For further information write to the Buffalo-Springfield Co., Dept. C&E, 1210 Kenton St., Springfield, Ohio, or use the Request Card at page 18. Circle No. 71.



Employed to drill dewatering holes at the Walter George Dam, the Stardrill-Keystone KF-50 saved the contractor about three months, and solved the problem of water shutoff.



Inset shows Smith tilters during plant erection. Towering 700-foot canyon walls almost dwarf the batch plant built by the Noble Company of Oakland, California.

Smith Tilters Will Mix 6 Million Yards of Concrete for Glen Canyon Dam

They'll pour concrete 16 hours a day, six days a week, for five years to build Glen Canyon Dam. When it is completed in 1964, 6 million cubic yards of concrete will have gone into this "Giant of the Colorado" — fifth highest dam in the world.

Behind its mighty arched wall, the Colorado River will slowly and relentlessly create a lake that will extend 186 miles upstream . . . and may take 20 years to fill!

Power from its eight hydraulic turbines will serve five states: Arizona, New Mexico, Utah, Colorado, Wyoming.

Everything about Glen Canyon is big. And everything that goes into it has to be the best, including the equipment to build it. Out there in the desolate Colorado River canyon in southern Utah, nothing less than the best is considered for a job like this. Significantly, T. L. Smith Tilter mixers were selected for the concrete batching plant.

Mixing concrete for Glen Canyon is no "snap." Aggregate ranges from ordinary No. 4 size to hefty 6-inch boulders! It takes real "guts" to stand up under this constant battering, yet the six Smith 4-yd. Tilters are scheduled to do it for 5 years . . . discharging as much as 24 cubic yards of concrete every 3 minutes under peak operation.

Smith mixers are no strangers on the really big jobs. Smith mixers prepared all the concrete for Hoover Dam — just 150 miles downstream. And Flaming Gorge Dam — another spectacular structure in the Colorado River Storage Project — will be built with Smith-mixed concrete.

You may never need to mix 6 million yards of concrete, but isn't reliable performance like this your best assurance of real long-run economy? If so, it will pay you to find out more about Smith mixers. Call your local Smith representative, or write directly to T. L. Smith Company, Milwaukee, Wisconsin or Lufkin, Texas.

Affiliated with Essick Mfg. Company, Los Angeles, California. A0-4112

For more facts, use Request Card at page 18 and circle No. 398

methods

Traveler boom operates with 22-foot clearance



Using a boom shortened from 100 to 70 feet, a derrick traveler swings a 97-ton closure section, measuring 58 feet 11 inches in length, into position for a rail and road overpass in Connecticut.

Positioning 97-ton closure sections for two haunched girders is a ticklish job when the derrick traveler has about 22 feet of clearance under a catenary system and power line carrying 11,000 volts.

In completing a long box-girder span for a railroad overpass in Connecticut, American Bridge Division of U. S. Steel used a 200-ton derrick traveler with its boom reduced from 100 to 70 feet to work under the lines.

This was a $3,847,000 contract, awarded to the Mariani Construction Co., New Haven, Conn., for part of the relocation of State Route 34, a project in New Haven, Conn., that will eventually link the Connecticut Turnpike, New Haven, and the Wilbur Cross Parkway.

The bridge, having a center span of 378 feet 9 inches and side spans of 151 feet 6 inches, has two box girders spanning the main-line tracks of the New York, New Haven & Hartford connecting Boston and Springfield with New York City.

The girders for the 3-span continuous structure are 21 feet 6½ inches deep at the haunch sections over the piers and measure 12 feet 3 inches deep beyond the haunches. They are about 5½ feet wide measured between the ½ to ¾-inch-thick web plates, and are 66½ feet on centers. The top and bottom cover plates make the girder even wider, with widths of about 86 inches.

The western side-span sections, erected by two Manitowoc 3900 cranes, pass over U. S. 1, a heavily traveled route that could not be shut to traffic. For the opposite side span, which passes over an access road, American Bridge set steel with the 200-ton traveler.

Use falsework

During the erection of the side spans, falsework bents were used to facilitate operations. One bent for the western side span was positioned 67 feet 4 inches from the abutment so that erection could be handled by two Manitowoc 3900 cranes. After the

Save Up To One Third On Wire Tying Costs



"On-the-job" comparison tests have proved the Ideal Tie Wire Reel can save up to 33 per cent in wire, and speed tying by 25 to 30 per cent. That's why so many contractors have switched to the "Ideal" method for all their wire tying applications.



In addition, Ideal Reels protect the user, reduce fatigue, lighten the work-load, eliminate hazards caused by old-fashioned shoulder coils, and help cut man-hours lost due to accidents.

The Ideal Reel is extremely versatile . . . right or left hand use . . . loads four times faster than any other reel . . . patented knob rewinds unused wire . . . eliminates loose wire ends, kinking, and tangling . . . handles 11-20 gauge wire in Black Annealed, Monel, Galvanized Soft, Stainless Steel, Copperply, and Aluminum.

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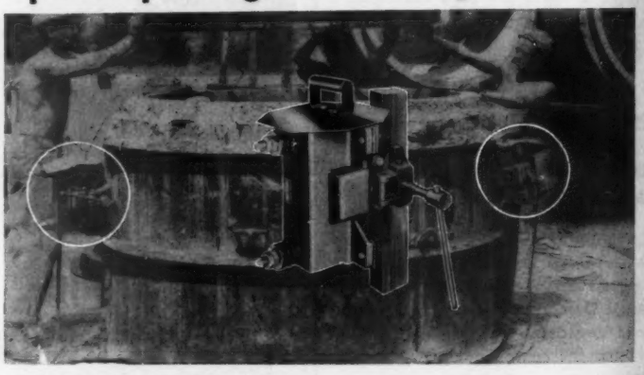


Ideal Reel Company • 1424 Madison St. • Paducah, Kentucky

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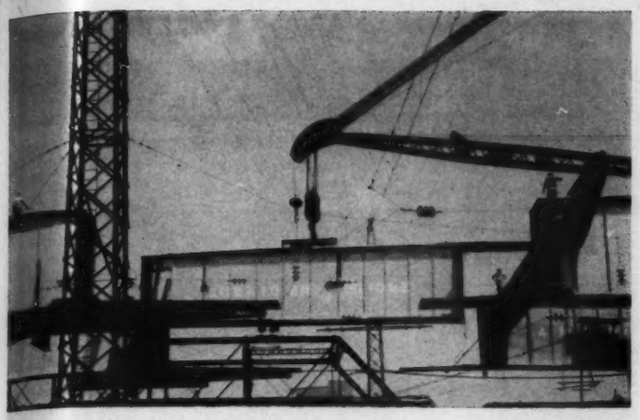


VIBRATORY FEEDERS



VIBRATING SCREENS

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With about 22 feet of clearance below power lines, the boom works in an almost horizontal position as closure nears. The brdige has a center span of 378 feet 9 inches and has two box girders spanning the rail lines.



The section will be riveted to the cantilever, right; the opposite end rests on a temporary steel apron extended from the cantilever, left. This allows both ends of the girder to be jacked so that end rocker assemblies can be placed.

steel reached the pier, the 200-ton traveler was erected on the side-span girders. The girder sections for both side spans were supported at each abutment on temporary steel plates. This prevented any damage to the permanent rocker bearings during erection by the heavy derrick.

The girders were also temporarily tied into the concrete abutment by steel rods embedded in the concrete. These rods pass through the bottom flange and tie to the top flange of the girders. This, together with placement of concrete for a 100-ton counterweight between the two girders, was done to support the cantilevered sections beyond the piers and the stiffleg traveler.

The 110-foot-4-inch-long haunch sections of the girders were placed in two lifts because of their massive dimensions and weights. After these sections were in place, completing the west side span, the traveler was positioned on this steel to erect the cantilever sections beyond the haunches.

The stiffleg was then moved to the east abutment of the bridge to erect the side-span steel on this side. Here, a falsework bent was positioned 85 feet 10¼ inches from the abutment to support the box-girder sections and the traveler as it worked out over the piers to place the cantilever steel. For all lifts, the stiffleg was bolted to the top flange of the girders for additional stability and capacity.

Two 4-wheel dollies, powered by a Hercules 2-drum hoist, moved the box-girder sections from the abutment to the traveler. The dollies rolled on the service track laid on timber ties supported by the floor beams between the outside cantilever brackets. The two Manitowoc cranes handled the lifts from the abutment to the dollies.

Boom shortened

To place the 58-foot 11-inch closure section between the cantilevers, the derrick boom had to be shortened to 70 feet in order to clear the overhead power lines 22 feet above the deck grade. The overhead catenary

Standard Steel Model 658

Road-a-Mite

combines both ECONOMY and PERFORMANCE



A Mighty Road-Builder with TODAY'S COMPACT CAR DESIGN!

On the working end of the Model 658 is a newly designed 12' full-circulating spray bar. Turn-up ends provide for additional sections up to 24' in length. Mechanical lateral shift and hydraulic vertical adjustment are standard.

The Model 658 provides the small community with equipment at a small investment so that they can more easily protect a larger investment in roads and streets. This compact new unit also provides the small city or beginning contractor with adequate means for blacktop construction work. The Model 658 provides low-cost secondary support to operators of the bigger pressure distributors.

Built to the Highest Standard

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ASPHALT DISTRIBUTORS . . . BURNERS . . POWER AND TRACTION DRIVEN CONSTRUCTION BROOMS . . . . MAINTENANCE DISTRIBUTORS . . . TAR KETTLES . . . AGGREGATE SPREADERS SHELVING HARDWARE . . PIPE LINE EQUIPMENT . . SUPPLY TANKS AND AGRICULTURAL EQUIPMENT

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Standard Steel Works, Inc. NORTH KANSAS CITY, MO.

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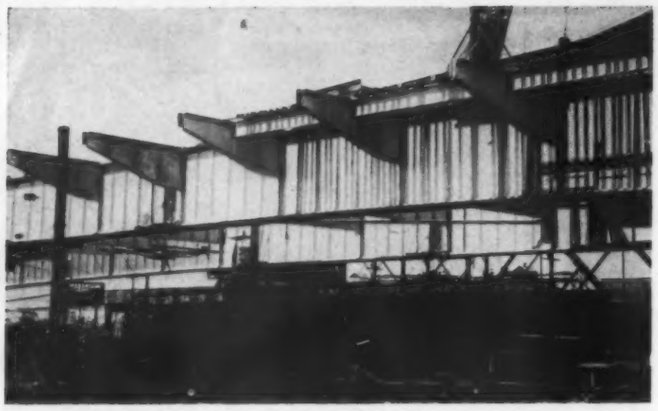
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ROCKFORD, ILLINOIS

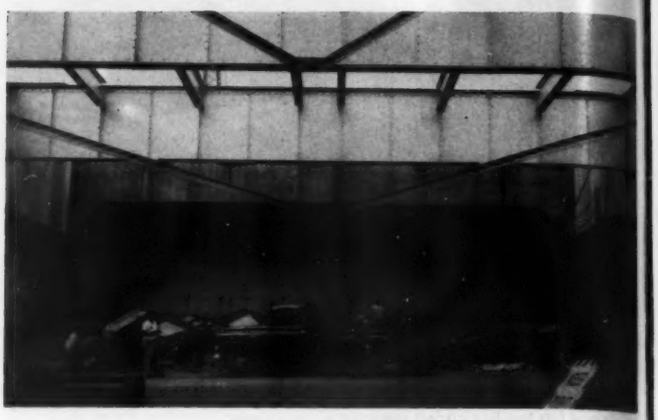
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For more facts on Insert, use coupon or Request Card at page 18 and circle No. 340



This is the completed closure section, part of the 378-foot 9-inch center span. The two girders will support the 8-lane roadway, part of which will be positioned over the 19-foot cantilevered steel brackets.



Support of the heavy erection derrick and the cantilevers for the center span required the ends of the two box girders to be temporarily tied to the abutments by steel rods and a 100-ton concrete counterweight to be formed between the two girders.

(Continued from preceding page)

system had to be maintained during erection because of existing railroad traffic. The location of the railroad station made it impossible for trains to coast in without power through the job site.

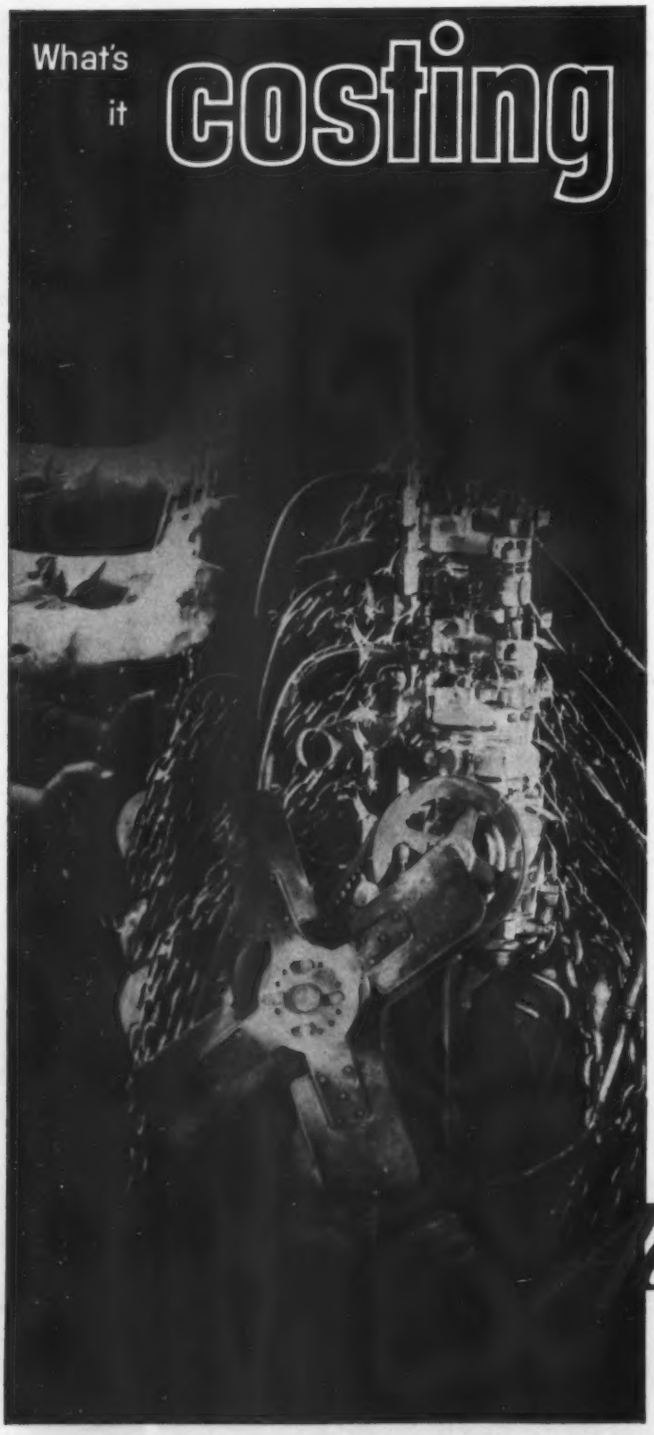
The derrick working at the edge of the east cantilevers picked up the 97-ton closure section and swung it into place with an almost horizontal boom. The section was temporarily bolted into position and then permanently riveted to the east cantilever. The opposite end of the closure was supported by a temporary steel apron extended from the bottom flange of the west cantilevers. This temporary support was required so that girders could be jacked up at the abutments to permit placement of the permanent rocker assemblies. This phase of raising the girders at the end supports by 2 feet was handled by two 100-ton hydraulic jacks at each end.

This jacking permitted the permanent riveted splice to be made at the closure section. All the vertical splices and cover plates were made and attached by riveting. All the horizontal splices were made with high-strength bolts.

Part of the 8-lane roadway of the



A crew prepares the ends of the girders, which had been temporarily supported on steel bearing plates during erection, for the 100-ton jacks that will be used to raise the steel when permanent rocker assemblies are ready to be installed.



Good as today's engines are, the cost of operation is a whale of a lot higher than it has to be if you're still using old-fashioned equipment with clutch pedal and clash-box.

For with a hydraulic drive – like Allison's TORQMATIC – you can free your engines from the shock-loads and strains which stick-shifts cause.

You see, TORQMATIC DRIVES extend engine life by virtually eliminating one of the main causes of engine wear – lugging. And they get more work out of an engine, too, because there's no power lag when the driver shifts.

SAVE MONEY AUTOMATICALLY

What's more, TORQMATIC eliminates all engine-disconnect clutch repairs – saving owners of big equipment an average of $800 a year in parts and labor. It saves up to $2,000 in equipment damage every time you train a rookie in operating big equipment – practically eliminates high repair bills for unavoidably shock-loaded drive lines and axles.

Just from the operating cost angle, the man with TORQMATIC advantages–who thinks about *total* cost, not just first cost – figures to head off a lot of competitors. Interested? See your equipment dealer today or write Allison.

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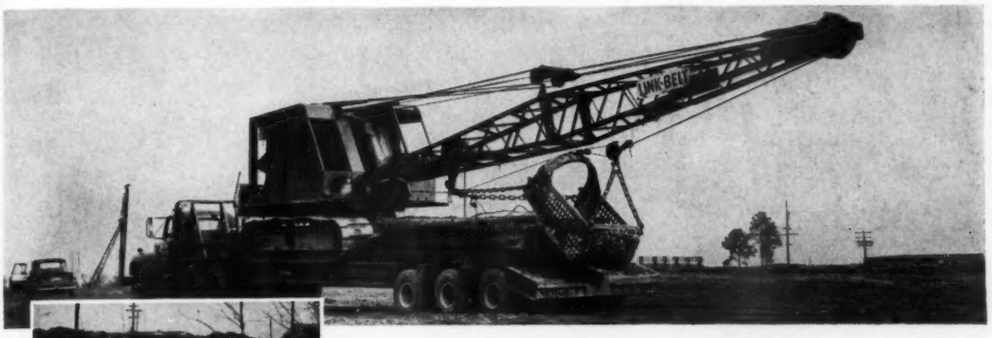
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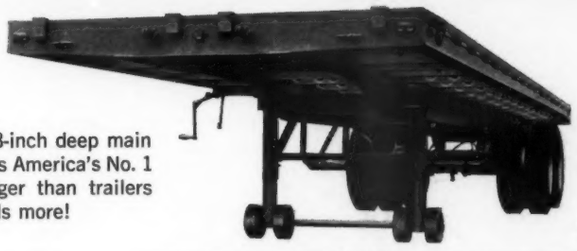
From the versatile, fast handling Tandem Tilt-to-Load to the rugged, extra heavy-duty 3-axle Low Beds, every model in the Dorsey low-bed line is engineered and built to stand up under toughest conditions. Capacity ratings quoted are always conservative to provide a margin of safety, and standard list prices include trailers fully-equipped for highway operation.

Dorsey Tilt-To-Loads (up to 15 ton capacities) combine speed and efficiency with economy... so light they're easily pulled by a dump truck. Precisely balanced two-way hydraulic tilt control.

Dorsey Three-Axle Lowboys (up to 75 tons with higher capacities on special order) have fully-equalizing suspension with springs as well as walking beams so that all axles share the load equally on rough terrain. Regular or removable gooseneck models.







Dorsey Giant Platform, with its 18-inch deep main frame, has earned its reputation as America's No. 1 platform buy. It's actually stronger than trailers weighing as much as 2,000 pounds more!

Dorsey builds heavy-duty trailers for every purpose—
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Cedarapids

Built by IOWA

the most popular performer on the road

There's a big difference between run-of-the-mill acting and *star performance.* And that's why the Cedarapids Bituminous Paver is the most popular performer on the road! Owners say so . . . they're the ones who like the Paver's profit-making role. Job superintendents say so . . . they're the ones responsible for the results of Paver performance. Operators say so . . . and they're the ones with first hand information about the performance of the machines they run.

Join the ranks of the hundreds of paving contractors whose enthusiasm for the on-the-job performance of Cedarapids Pavers makes them the most popular stars on the road today.

JEANNE CRAIN IS SITTING PRETTY
on this Cedarapids Bituminous Paver while she describes the all-automatic controls to Miss State University of Iowa. The popular TV and movie star knows more about acting than she does about machinery, but she certainly knows about popularity. When a machine becomes as popular as this Cedarapids Paver, you can be sure its performance is "way above average."



why is the cedarapids paver so popular?

IT'S FAST



Operating speeds up to 102 feet per minute get the job done quicker and at less cost. You can handle more jobs per season.

IT LAYS PERFECT MAT



The vibrating screed "irons" the mix into a smooth, uniform, high density mat with no voids or tears, even at 102 fpm. The Cedarapids Paver saves time and money . . . there's little need to go over rough spots. Takes less rolling, too.

MAINTENANCE IS EXTREMELY LOW



⅓ fewer wearing parts than on other pavers cut maintenance requirements and costs. Less downtime means more *work* time per season. You can bid confidently on the tightest paving schedules.

IT'S EASY TO OPERATE



"It's an operator's paradise," say the men in the driver's seat. The few simple electric controls make the Cedarapids Bituminous Paver so automatic it almost operates itself.







"We like the speed and mat-laying qualities of the Paver, and also the design of our Cedarapids Bituminous Mixing Plant."

Canadian Contractor

COMPLETE YOUR PAVING PICTURE WITH A CEDARAPIDS MIXING PLANT

Here's the way to supply your Paver with lowest cost mix. Use the Cedarapids Bituminous Mixing Plant model best suited to your production needs. The complete line includes portable or stack-up batch-type models with all-automatic, semi-automatic and manual controls, in 1500 lb. to 7500 lb. batch sizes. Two sizes of continuous mix plants also available.



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CEDAR RAPIDS, IOWA

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The Surveyor's Notebook

Reporting on Unusual Surveying Problems and Their Solutions

Notekeeper: W. & L. E. Gurley, America's Oldest Engineering Instrument Maker

How to prove a point ...about a point...with an Optical Plummet Transit



William Dryburgh sights through his new Gurley Optical Plummet Transit.

One windy day, William A. Dryburgh, engineer in charge at the job site of a Detroit construction project, had established a point using a conventional plumb bob. A check on his setup was important to its later use for tying in. A new Gurley Optical Plummet Transit, just demonstrated to him and to Robert Bryant, of Bryant and Detwiler Construction Company, was on hand.

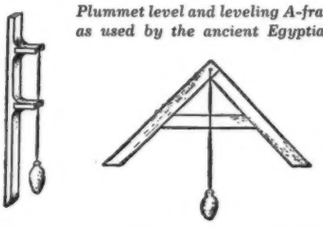
Setting up the new instrument over his point, he leveled up. Sighting in the Optical Plummet, he used the built-in shifting head tripod to bring the instrument directly over the point.

Satisfied that the instrument had remained level during shifting, he then took a sight on a target through his main telescope. Next he flipped his telescope without moving its upper or lower motion, taking a back sight on a target placed on the building behind him. His back sight did not check.

Double centering proved the instrument's perfect adjustment. Checking its levelness, he again tried fore and back sight with the same result. An obvious error existed; so he proceeded to "buck in" the Optical Plummet Transit from the targets, and found he had an error as established by his plumb bob. *Result: He kept the Optical Plummet Transit.*

The plumb bob has served men well for thousands of years. Changed very little since the Egyptian pyramid builders used it, its swing and sway can be exasperating—especially on windy locations. It is essentially inaccurate.

Gurley Optical Plummet Transits replace the outdated cord and bob with a method deriving precision from accuracy intrinsic in the laws of optics. Readings are instantaneous. Wind cannot blow it out of vertical—there is nothing to swing or gyrate. The built-in shifting head allows a 2-inch shift of instrument over point, giving ample leeway in initial setup. Rotating the instrument 180 degrees assures you of positive centering. *Write for new Bulletin OP-100.*



Plummet level and leveling A-frame as used by the ancient Egyptians.

Ask to See the Variable Power Eyepiece

Variable Power is now *standard* on Gurley Optical Plummet Transits—and all other Gurley Transits and Levels. With "VP" you go from high to low and back again—with stops anywhere in between.

"VP" offers a clear, flat field, devoid of aberrations at any magnification. You have all the power required for the longest sight, and reduced power for local conditions. You will find visibility under poor lighting can be improved by use of lower magnification. Turbulent effect of heat waves is minimized with lower power. Write for "Facts on VP".

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For more facts, use Request Card at page 18 and circle No. 341

bridge will be supported by 19-foot steel brackets cantilevered out from the box girders and spanned by 7-foot built-up floor beams.

Personnel

Buck Wotring was the superintendent for American Bridge, steel subcontractor, and Frank Dini was the superintendent for Mariani, the general contractor. Dale L. Barber was the resident engineer for D. B. Steinman, the consulting engineer for the Connecticut State Highway Department. THE END

White Motor division names to sales staff

■ The White Truck Division of The White Motor Co., Cleveland, Ohio, has added Robert L. Thomason to the sales staff of its Philadelphia branch. He will specialize in the sale of White and Autocar trucks for construction purposes.

Thomason has been a salesman for Steel Distributors, Inc., Philadelphia, for six years, and has also served as a field engineer with Stone & Webster Engineering Corp., Boston and New York.

Case history

Four truck cranes do 18 jobs in one day

Action Truck & Crane, Inc., of North Hollywood, Calif., recently handled 18 separate jobs in one day with four Bucyrus-Erie H-3 Hydrocranes.

These jobs, located from 10 to 30 miles apart, involved such different



This is one of four Hydrocranes that recently handled 18 separate jobs in one day for a North Hollywood firm.

tasks as erecting steel for a church and restaurant, demolishing a brick wall, and tearing out a bank vault.

Each Hydrocrane was equipped with a special 2-way radio. A speaker was then installed in the operator's cab on the crane, as well as in the truck cab. This eliminated the gap that previously existed when the operator was out of the truck and at the controls of the Hydrocrane. There was little or no lost time because of breakdown in communications.

For further information write to the Bucyrus-Erie Co., Dept. C&E, South Milwaukee, Wis., or use the Request Card at page 18. Circle No. 70.

For more facts, use Request Card ▶ at page 18 and circle No. 342



A TRENCH FOR A MAJOR SEWER installation alongside the new Montreal freeway is being dug by a Manitowoc 1¼-yard trench hoe. Reinforced-concrete pipe was laid in 6-foot sections in trenches up to 8 feet wide. The entire job was in quarry rock, which made it necessary to blast all 22,850 feet of trench for the project. The Manitowoc excavated an average of 360 cubic yards of blasted rock and hard-packed earth each 10-hour day. Civil Construction, Inc., of Montreal held the contract.



Rear-Dump "Eucs" have payload capacities of 10 to 55 tons—are powered by engines of 132 to 672 total h.p. . . . have loaded speeds up to 41 mph.

Check Euclid Performance for Lower Hauling Costs

Leading contractors, mines, quarries and industrial users of heavy earthmoving equipment the world over have standardized on Euclids for tough off-highway hauls. They know from years of experience on their own operations that "Eucs" get more work done every shift — that production cost is lower than with other types and makes of equipment.

Euclid has a complete range of sizes and models to fit every job requirement — rear dump and bottom dump haulers, self-powered scrapers and the world's most powerful crawler tractor. Your Euclid dealer will be glad to provide a production-cost estimate on your present or planned operations — be sure to see him before you replace or add to your equipment fleet — and have him show you why Euclids are your best investment.



Bottom-Dumps carry payloads of 13, 17 and 30 cu. yds. struck . . . are powered by 227 to 432 h.p. engines . . . have top speeds up to 33 mph. Full length, unobstructed door openings make these "Eucs" ideal for dumping free-flowing material into drive-over hoppers.



The TC-12 Crawler has 2 engines and independent track-drive . . . 425 net h.p. . . . full power shift . . . top speed of 7.8 mph. This "Euc" tractor has unequalled work-ability for heavy dozing, ripping and similar work in construction, mining and logging.



This "Twin" Scraper has 2 engines with Torqmatic Drive . . . all wheel drive permits self-loading . . . struck capacity is 24 cu. yds. There are six other Euclid Scrapers, overhung engine and six wheel types, with struck capacities ranging from 7 to 24 yds.—9 to 32 yds. heaped.

EUCLID Division of General Motors Corporation
Cleveland 17, Ohio

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

Names in the News





Myles C. McGough, left, executive vice president, and Sherman H. Serre, senior vice president, of Merritt-Chapman & Scott Corp.'s Construction Department.

Merritt-Chapman & Scott elects 3 vice presidents

Myles C. McGough has been elected an executive vice president in charge of the Construction Department of Merritt-Chapman & Scott Corp., New York, N. Y. Sherman H. Serre was made senior vice president, and Frank R. Creedon a vice president of this department.

McGough, vice president since 1946, is now responsible for all the company's construction projects, currently ranging from four major dams in the western United States to paper-mill and pipeline projects in Israel and Iran. His predecessor, William Denny, is retiring from active service after 32 years with the company.

Responsibility for all Merritt dredging operations is assumed by Serre. As senior vice president, he will continue to be head of the Great Lakes construction division, with headquarters in Cleveland.

Creedon, who joined the company in 1955, is currently directing construction of two key portions of the Niagara Power Project—the main generating plant at Lewiston, N. Y., and the intake structures and section of twin conduits at Niagara Falls.

Four partners added to Severud-Elstad-Krueger

Alfred J. Perrone, Werner Sturm, Fred Fischer, Jr., and Walter F. Conlin, Jr. have become general partners of the consulting engineering firm of Severud-Elstad-Krueger Associates, New York, N. Y. Werner Gottschalk and B. Brurock Harstead were made consultants, and Dr. Hannskarl Bandel was named an associate of the firm.

Bryant heads new division at Eastern Gunite

A new Structures Stabilization Division has been created by Eastern Gunite Co., Bala-Cynwyd, Pa., and Fred J. Bryant has been made vice president in charge of it. He was formerly vice president of Intrusion-Prepakt, Inc., Cleveland.

The new division will handle, on a nation-wide basis, problems and projects involving grouting for foundation stabilization, stone-masonry restoration, floor jacking, water control, and other fields in which the firm's grouted-aggregate-concrete methods are employed.

ASCE award to Chandler

The American Society of Civil Engineers has selected E. Lawrence Chandler as the first recipient of the recently established ASCE Professional Recognition Award. The award honors a member of the society who has made a substantial contribution to the status of the engineering profession.

Chandler has retired from his post as assistant secretary of ASCE but continues as treasurer. He is well known as a dam builder, having served as chief engineer for the Chattanooga Flood Control District, chief estimator for TVA, and chief construction engineer on the Pensacola Dam, as well as participating in many other projects.

Engineering firm elects president

William A. McAlister has been elected president of the architect-engineering firm of Thomas J. Davis, Inc., following the affiliation of that firm with Engineering Service Corp., Los Angeles civil engineers.

McAlister will manage the firm's Guam office in Agana and will also direct the activities of Engineering Service in the Pacific area.

Before his promotion, McAlister was vice president in charge of sales and engineering for three years.

Personnel changes in Employers Mutuals

J. F. Huntman, former field construction safety specialist in the Albany office of the Employers Mutuals of Wausau, Wausau, Wis., has been assigned to the home office staff but will be located in the Illinois branch office at River Forest. He will take over some of the field service work for Illinois construction policyholders and will represent the company in liaison with the National Safety Council, Associated General Contractors, and other organizations.

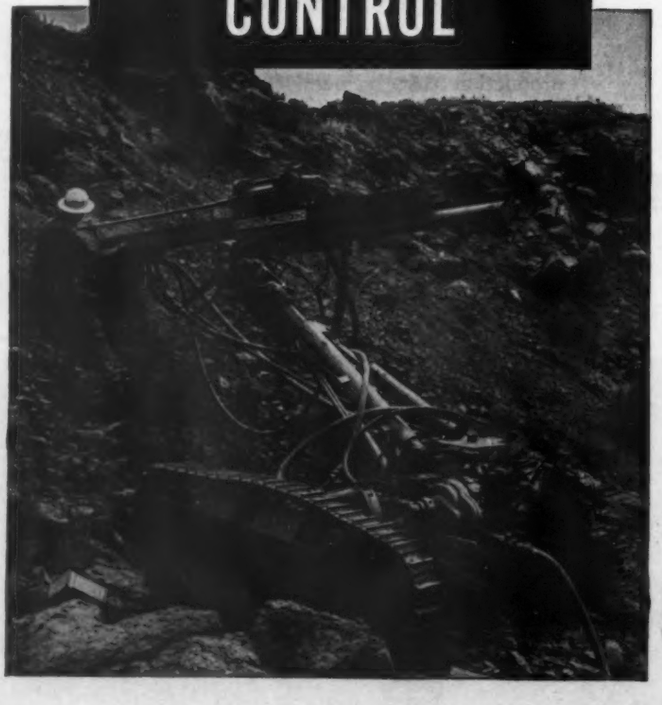
Ralph L. Ward, previously Illinois branch office safety engineer, has been moved to the home office to serve as a construction safety specialist. His work includes research

GARDNER-DENVER OPENS A NEW ERA IN PERCUSSION DRILLING

No other rock drill compares with

THE NEW GARDNER-DENVER PO

ABSOLUTE CONTROL



No other rock drill gives your operator absolute and independent control of these vital rock drill functions:

Rotation without impact—Efficient gear motor supplies powerful rotation in either direction, even when drill is not impacting. Three rotation speeds at the flick of a control. Neutral position stops rotation.

Impact without rotation—Separate control provides impact action without rotation. Percussion can be varied from light to heavy blows, and can be used to loosen couplings or stuck steel.

Impact and rotation—This unique drill provides light percussion and rapid rotation for drilling in soft rock . . . or heavy impact and slow rotation for hard rock.

HIGH-POWERED DRILLING TEAM—The new PR123 drill on the famed Gardner-Denver Swing-Boom "Air Trac"® makes an unbeatable rock drilling combination.





Ralph L. Ward (left) and J. F. Huntman, construction safety specialists with Employers Mutuals of Wausau, Wis., have been assigned to the home office staff.

and development of technical and educational material for engineers and policyholders, as well as aid to the underwriting department in developing rates for major construction risks and determining their desirability.

Otto S. Holmskog has retired after 27 years with Employers Mutuals. He pioneered in such techniques as dramatic safety demonstrations and "tool box" safety discussions and wrote a series of booklets on construction accident prevention that are in use throughout the world.

Rackle names manager

James O. Wilbraham has been named district sales manager of The George Rackle & Sons Co., Cleveland, Ohio. He will act in a sales and liaison capacity with northeastern Ohio architects, engineers, and contractors.

The company, celebrating its 90th anniversary in 1960, produces precast-concrete structural and architectural building products.

Blitz firm names

Joseph P. Blitz, Inc., New York City building and real estate firm, has appointed Caesar Bruschi as project manager in charge of construction for Franklin Houses in Manhattan and the Van Buren and McKinley Houses in the Bronx. Blitz is general contractor for these City Housing Authority projects.

Stone & Webster promotes

William L. Sheets, vice president of Stone & Webster Engineering Corp., Boston and New York, has been made senior construction manager of the organization and will be responsible for the direction of all construction department activities.



William L. Sheets, senior construction manager of Stone & Webster.

Sheets joined Stone & Webster as an instrument man in 1929 and subsequently became resident engineer, project engineer, and general superintendent on projects in various parts of the U. S. He was named construction manager in 1955 and elected a vice president of the organization in 1958.

McKee vice president

William B. Hudson, Jr., has been elected vice president in charge of refinery engineering at Arthur G. McKee & Co., Cleveland, Ohio. He will be responsible for estimating, and for the process and mechanical design of petroleum refineries and chemical and petrochemical plants. Edwin G. Graeber has been named technical director in charge of process engineering.

New project manager on Hanson Dam project

Charles A. Peterson has been made project manager for the Corps of Engineer's $8,800,000 Howard A. Hanson Dam in Washington. Henry J. Kaiser Co., Oakland, Calif., and Raymond International Inc., New York, N. Y., are joint-venture partners on the project.

Peterson was formerly assistant project manager on the dam. He replaces H. E. Christman, who has returned to the Kaiser home office to assume new duties in connection with programming foreign contracts.

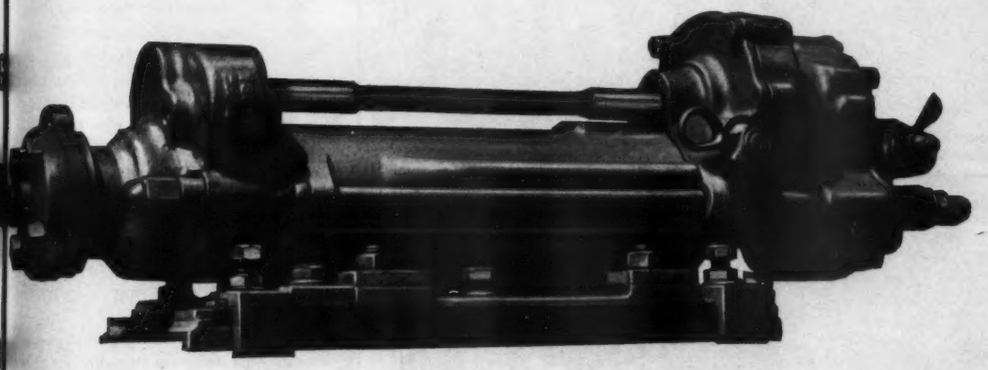
Simkin names sales head

Charles Simkin & Sons, Inc., engineering contractor of Perth Amboy, N. J., has appointed Frank D. St. Hilaire as vice president of sales. He will be in charge of developing and expanding engineering and construction sales for the company in the chemical, petroleum, nuclear, and manufacturing industries.

St. Hilaire, formerly president and director of Jamaica Oil & Chemical Co., Ltd., has served for 19 years in executive sales and management posts, both in the United States and abroad.

S. W. Brown appoints

The New York City consulting engineering firm, S. W. Brown, has named Herbert Pomerantz as project manager for commercial and industrial designs. Pomerantz, a licensed professional engineer in New York State, is a member of the American Society of Heating, Ventilating, Air Conditioning and Refrigerating Engineers and of the National Society of Professional Engineers.



POWER ROTATION MODEL PR123

UP TO 30% FASTER PENETRATION

The new PR123 is the only rock drill which uses *all* hammer energy directly for percussion. There's no rotational drag on the piston hammer. Every blow is sharp and solid. Results: faster hard rock drilling than ever before. Depth of hole does not affect drilling speed as it does with a conventional rifle-bar-rotated drill. You can drill deeper holes with the PR123.

SELECTIVE DRILLING

Now your operator can line up the right combination of rotation speed, impact force, feed pressure and hole blowing for fast drilling in any type of rock. No other rock drill provides absolute, independent and instantaneous control of impact and rotation. Drilling action can be changed as soon as the bit enters a new rock formation.

NO ROTATION PARTS IN CYLINDER

The PR123 has no rifle bar, no ratchet ring, no pawls or other vulnerable internal rotation parts, and thus eliminates the most frequent causes of rock drill breakdown and maintenance. Instead, rotation is supplied by a long-wearing gear motor which is efficiently lubricated by the air line oiler. A torsion bar absorbs rotational shock between shank and motor.

POWER COUPLING AND UNCOUPLING

Independent rotation control is a real time-saver when drilling with sectional rods and couplings. Rotation without impact permits power coupling of threaded rods without damage to the threads. Reverse rotation speeds uncoupling when coming out of the hole. Independent power rotation also helps free stuck steel.

PROVEN DESIGN—The new PR123 uses the same cylinder and automatic valve parts as the popular Gardner-Denver DH123. Renewable chuck driver liners for all sectional shanks. Piston diameter: 4½". Length: 38½". Weight, less mounting: 290 pounds.

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

For more facts, use Request Card at page 18 and circle No. 343

Aerial photographs used in locating aggregates

■ Aerial photographs are coming into increasing use in locating road-building materials, according to a paper written by O. W. Mintzer, associate professor in the department of civil engineering at Ohio State University, and published by the Engineering Experiment Station. Locating gravel close to the construction site in an area of apparent scarcity may result in a big saving for the contractor.

Thirty years ago, Professor Mintzer points out, time and construction costs were much lower, and an engineer looking for sources of gravel could "walk out" the area. Today, many man-hours can often be saved by use of the air-photo method, which reduces to a minimum problems caused by inaccessibility, thick vegetation, and uncooperative landowners.

In an air photo, a large area is covered at one time. The picture indicates whether or not more intensive search is justified and, if so, in what part of the area it should be carried out. A knowledge of geology makes it possible for an engineer to interpret and place special meaning on most land forms photographed. The air-photo method is based on the recognition of a given land form because the composition of the soil within the land form has certain characteristics. In air photos of certain areas, Mintzer has found that light-toned spots are indicators of potential gravel sites.

For more facts, use coupon or Request Card at page 18 and circle No. 345



A Herman Nelson heater sends clean, uncontaminated heat up into a new silo for drying and curing.

Case history

Huge concrete silos cured with heaters

A time-saving technique in drying and curing concrete was put to good use by Walsh-Perini-Rooney Cos. in building the new Miami plant of the Lehigh Portland Cement Co. Mild though it was, the outside temperature needed a helper in safe, forced-air heat for drying out 30 huge concrete silos, each measuring 124 feet tall and 32 feet in diameter. The use of the Herman Nelson portable Utility heaters helped speed the job to completion, saving time and money, the contractor reports.

Clean, smoke-free heat was directed by canvas ducts up through the base of each silo. The fume-free heat is an essential for structures, such as silos, to be used for storing bulk cement—and was one of the reasons why Walsh-Perini-Rooney chose the Herman Nelson heaters.

The Utility heater is one of four Herman Nelson models. It may be used with either electric-motor drive or gasoline engine, and with or without flexible canvas ducts. The Utility burns either gasoline or fuel oil, with no adjustments needed. Heat output is up to 425,000 Btu per hour.

For further information write to the American Air Filter Co., Inc., Dept. C&E, 217 Central Ave., Louisville 8, Ky., or use the Request Card at page 18. Circle No. 65.

Converto a member of prestressed institute

■ Recently admitted to membership in the Prestressed Concrete Institute was the Converto Mfg. Co., Cambridge City, Ind., producer of heavy steel products. Although the company has manufactured and marketed steel forms of all types through another organization for several years, it has only recently entered the prestressed field under its own name.

Converto has placed sales personnel throughout the United States and Canada and also provides field engineering service for present accounts.

In addition to a full range of precast and prestressed forms, the firm produces an extensive line of hydraulic hoists, dump-truck bodies, dump trailers, heavy-duty truck trailers, and transport equipment. The company is a division of Golay & Co., Inc.



There's nothing like a Cleveland J-20 for distribution trenching

- only 60" wide over its crawlers.
- hydraulically shifted conveyor.
- pulley-enclosed dual conveyor drive.
- operator controls conveyor speed and direction.
- digs 12"—24" wide, 5½' deep.
- 4 forward wheel speeds plus reverse.
- 33 positive digging speeds.
- *all* speeds in both directions.
- world's finest trencher crawlers.
- 1,000-hour track lubrication.
- full-range boom hoist.
- 330 cu. in. engine, 50 HP @ only 1250 RPM.
- hydraulic-lift crumbing shoe, optional.
- 100% control at operator location.



DIGS MORE JOBS... IN MORE PLACES... AT LESS COST

- works in tightest quarters.
- sneaks by poles, trees, etc.
- trenches 18" from side clearance.
- digs services as well as main extensions.
- digs all soils—hard, loose, wet, dry.
- truck-loads on shallow, excess-spoil cuts.
- conveyor capacity for deep sloped trench.
- easy on lawns, sidewalks, blacktop.
- digs trench clean, to precise grade and width.
- reliable production in all job conditions.
- simplifies job-scheduling.

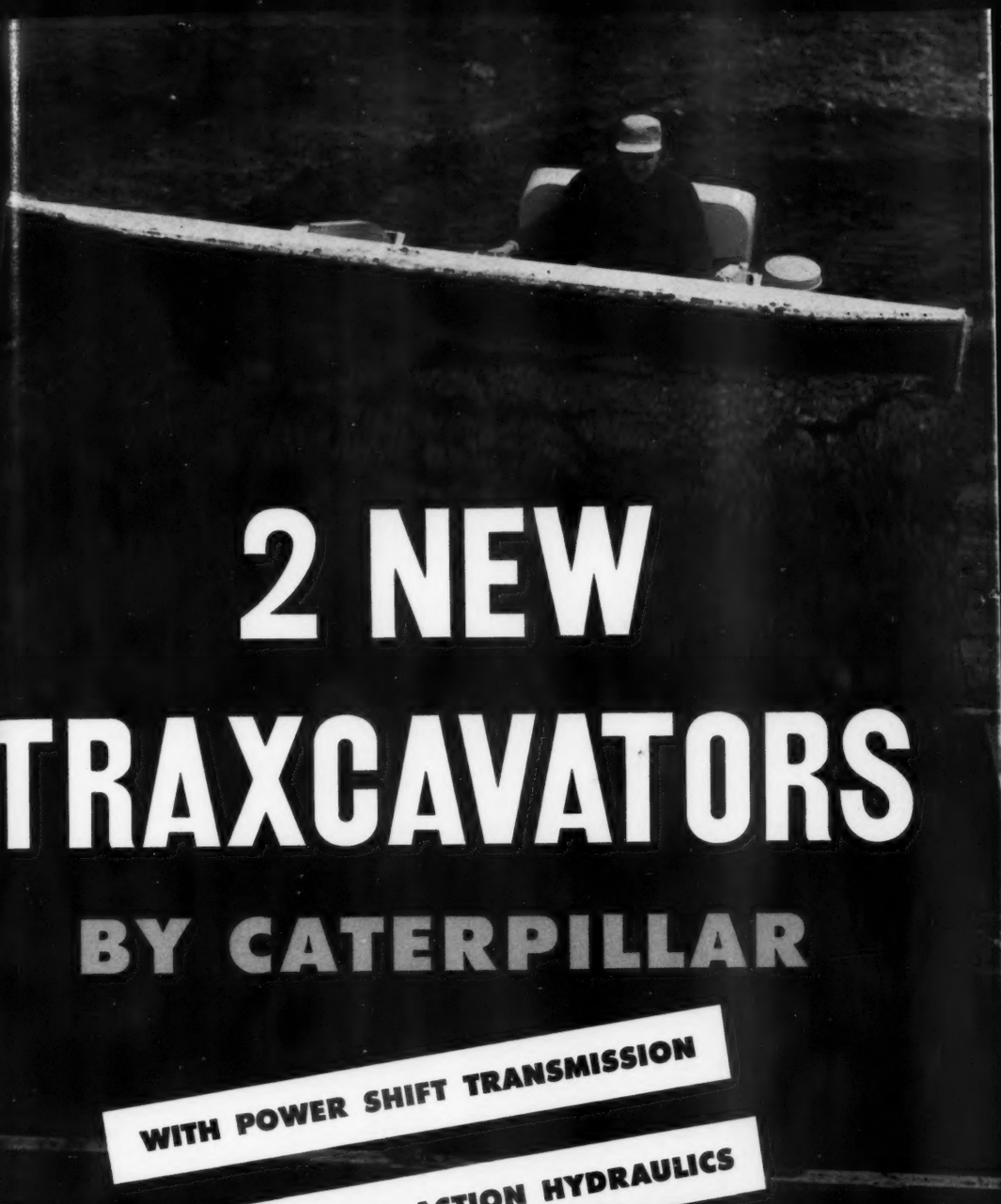
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For more facts, use Request Card at page 18 and circle No. 344



2 NEW TRAXCAVATORS

BY CATERPILLAR

WITH POWER SHIFT TRANSMISSION

AND LIVE ACTION HYDRAULICS

977 Series H · 955 Series H

... all new for new high production

FASTER loads...lifts...hauls...



New Cat Series H Traxcavators!

There *is* a way to beat higher costs—and that's with increased production. For tractor-loader jobs, here's your answer in the new Caterpillar 977H and 955H Traxcavators. Designed to set a production pace far faster than the models they replace and any other tractor-loaders of comparable size, they're milestones in tractor-loader progress. With Cat power shift transmission and Live Action Hydraulics, they're machines that never stop. Look at the action pictures here and you'll see why. That's the 150 HP 977H with its 2½ cu. yd. bucket working. The 100 HP 955H with its 1¾ cu. yd. bucket is equally spectacular. Listed here are some of the features that make these machines the fastest working tractor-loaders ever built. For complete details, see your Caterpillar Dealer.



.00 sec.

READY TO GO. With the range selector in low, the operator has only to use the power shift lever for split-second changes of speed and direction. Between the range selector and the power shift lever, the new 977H has 4 speeds forward and 4 faster in reverse. However, for the average job, only the power shift becomes the operating lever. Automatic tilt control has positioned the 2½ cu. yd. bucket for digging.





4.2 sec.

FASTER LOADING. With 150 HP at the flywheel and an operating weight of 36,270 lb., the 977H develops up to 72,000 lb. push at converter stall without stalling the engine—push aplenty to break out big loads. Live Action Hydraulics deliver increased digging power to operate the bucket with greater speed and force for faster loads. The material here is an earth and gravel-mixture, up to one inch in size.





13.2 sec.

FASTER HAULING. Using a light touch on the power shift lever to reverse instantly and pick up haul speeds, the operator returns at 4.0 average MPH over a total distance of 48 feet to the truck. Because the new 977H is heavier than the previous model and its center of gravity is 10% further to the rear, it has greater stability to handle with ease the heavier loads in the new 2½ cu. yd. bucket.

dumps . . . cycles!





18.0 sec.

FASTER DUMPING. The 977's bucket reach of 39½" at 9' 4" dump height easily clears this 7' 8" high, 10 cu. yd. truck. With this reach, the operator can cast the load where he wants it without time-wasting jockeying. Automatic kick out on the lift controls further reduces bucket maneuvering time. Dumping completed, the operator moves the power shift lever for instant return toward another load.





26.4 sec.

FASTER RETURN. With a return time of 8.4 sec., the total cycle time for the 977 was 26.4 sec. In a typical job study, the average cycle time per truck load was 117.6 sec. In 60 minutes the 977H loaded 30.6 trucks with a total of 306 cu. yd. This is typical of the outstanding performance you can expect from the 977H—and, in its capacity, from the 955H. Nothing in their size range can match the Traxcavators that never stop for fast cycles and high production!

NEW POWER SHIFT TRANSMISSION



One lever—that's right, one lever gives split-second changes in speed or direction to slash cycle times and increase operator efficiency. This Caterpillar exclusive was designed especially for the 977H and the 955H.

NEW LIVE ACTION HYDRAULICS



Another Caterpillar first. Live Action Hydraulics provide faster lifting speed and greater lifting capacity without robbing power from the tracks. The 977H packs 41% more hydraulic lifting power—955H, 23% more than former models.

MORE HORSEPOWER WITH NEW CAT TURBOCHARGED ENGINES

Up 50% on the 977H—its new Cat D333 Engine develops 150 HP at the flywheel. Up 43% on the 955H with a new Cat D330 Engine that develops 100 flywheel HP.

NEW INCREASED BUCKET CAPACITY

An 11% increase on the 977H with new 2½-cu.-yd. bucket—and a 16.6% increase on the 955H with new 1¾-cu.-yd. bucket. To handle the heavier loads, bucket linkage on both machines has been strengthened.

NEW HEAVY-DUTY UNDERCARRIAGE

Built to stand up under the toughest jobs, the new undercarriage on both machines features larger, stronger track components that also increase stability . . . lifetime lubricated rollers that need no lubrication until rebuilding . . . and track guiding guards welded to the roller frame for positive track alignment. The 955H also features a new 6-roller track frame.

FAST TRAVEL SPEEDS

977H . . . Forward		955H . . . Forward	
Low	High	Low	High
2.0 MPH 1st	2.5 MPH 1st	2.1 MPH 1st	2.7 MPH 1st
3.6 MPH 2nd	4.7 MPH 2nd	3.9 MPH 2nd	4.9 MPH 2nd

Reverse speeds 25% faster than forward

MORE HIGH PRODUCTION FEATURES

Other features on both machines include a new, two-cylinder high-speed gasoline starting engine for positive starts in any weather . . . and a new, dry-type air cleaner that removes 99.8% of all dirt from intake air even in the worst dust conditions, cuts maintenance time as much as 75%. Retained features include 40° bucket tilt back . . . automatic bucket positioners and kick out . . . 3-grouser track shoes . . . and quick-change attachments that multiply the machines' usefulness.

PACE-SETTING POWER PLUS VERSATILITY

in the new Cat Series H Traxcavators



SIDE DUMP BUCKET Directly interchangeable with the standard bucket, the side dump bucket provides increased versatility for Series H Traxcavators. It eliminates turning and requires less loading space—to sum up, lowers cycle times for even greater production. Capacities: 977H—2⅝ cu. yd.; 955H—1¾ cu. yd.



You've seen how increased horsepower, power shift transmission and Live Action Hydraulics make the new 977 and 955 Series H Traxcavators the fastest working tractor-loaders in the field. That means higher production for you not just on one job application, but on many—because of the many attachments available with both machines. Bar none, Traxcavators are the most useful machines you can own. With attachments, you can always keep them working—and working *profitably*.

Have you checked your equipment line-up recently? There may be machines in it that are no longer paying their way—or not earning *all* the profits they should in light of today's more efficient units. A comparison of your existing tractor-loaders with the new Series H Traxcavators might easily prove these new machines would increase your output and profits far more than you imagine.

Get the down-to-earth facts about the new Series H Traxcavators from your Caterpillar Dealer. Better still, ask for a demonstration. See for yourself how they set a new production pace on the toughest kind of job!

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U.S.A.

CATERPILLAR

Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

BORN OF RESEARCH
PROVED IN THE FIELD



A test strip of asbestos-asphalt paving is being laid in Denver, Colo. Indications are that the addition of asbestos fiber to the asphalt paving mix gives a tougher road surface and considerable improvement in paving performance and the life of the roadway.

Asbestos-asphalt mixes show up well in tests

■ The addition of 2 or 3 per cent of short asbestos fiber to asphalt mixes shows promise of improving paving life and performance and cutting down on maintenance, according to researchers at Johns-Manville Corp., New York, N. Y. Eighteen test strips, subject to typical traffic conditions, have been laid in eight states and in Canada by highway departments and private contractors with the assistance of Johns-Manville. Highway specialists are experimenting with the mixes as part of their current paving projects.

Experimental tests have demonstrated that the asbestos-asphalt mixes give a tougher road surface, less brittle under low temperatures, more resistant to indentation under heavy load and high temperatures, and more resistant to cracks resulting from all kinds of weather. The addition of asbestos fiber makes it practical to use more asphalt in the mix.

A service road, paved with the new mix, on Johns-Manville property in Quebec has been subjected for six years to damaging weather conditions and heavily laden ore trucks, yet has been virtually maintenance-free. An adjacent asphalt pavement has required costly maintenance.

The development of the mix shows promise of opening up a market for 500,000 tons of asbestos fiber each year to be used in road paving. Total production in the free world is now about 1,500,000 tons. The grade of fiber needed for the mix is available in quantities far exceeding the present demand.

Foster office names

■ The L. B. Foster Co. has appointed Tom Kelly sales representative in the Houston office. With offices also in New York, Pittsburgh, Atlanta, Chicago, Los Angeles, and Cleveland, the company is a national supplier of steel pipe, piling, rail and track accessories.

Film on conveyor system that is 5½ miles long

■ A 16-mm sound and color motion picture, "Ideal Transport Story," released by the Link-Belt Co., Chicago, shows all phases of construction of a permanent transport belt conveyor system that runs 5½ miles from Ideal Cement Co.'s quarry in Lawrence to its plant in Ada, Okla. The all-weather conveyor carries limestone and shale at the rate of 1,000 tph.

The installation, supported by prestressed-concrete structures and made up of 7 separate belt conveyors arranged to feed onto each other consecutively, crosses two highways and two railroads. The system was designed and furnished by Link-Belt under a turnkey contract.

The 22-minute film may be obtained free of charge, for showing in the United States, by letterhead request from Link-Belt Co., Dept. PR, Prudential Plaza, Chicago 1, Ill.

Port Authority elects

■ Sloan Colt of New York City has been re-elected chairman of The Port of New York Authority. James C. Kellogg, III, of Elizabeth, N. J., was re-elected vice-chairman and Howard S. Cullman, New York City, to his fifth term as honorary chairman.

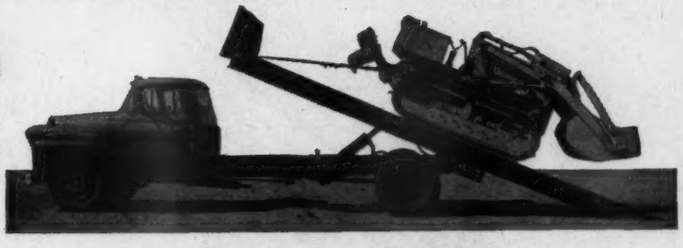
Also re-elected as executive director and general counsel, respectively, were Austin J. Tobin and Sidney Goldstein.

EQUIPMENT HAULING—the easy way!

HAUL MEDIUM WEIGHT CONSTRUCTION EQUIPMENT, PORTABLE BUILDINGS, TOOLS, AND MACHINERY EASILY AND ECONOMICALLY.

SCHWARTZ

RAMP HOIST WITH WINCH



- Fits all trucks 84" to 174", cab to axle.
- Hydraulically operated with controls at the side of the ramp.
- Mounts without removing truck frame cross member.
- Load rating—up to 12 tons.
- Rugged power hydraulic winch operated off truck power take-off.
- Available with wood or steel platform with steel approach plate and steel cab protector.
- Hinge point located over rear spring shackle for better stability and less stress on truck frame.

AVAILABLE ALSO IN HEAVY DUTY MODELS FOR TANDEM AXLE TRUCKS

- Hoist rating up to 15 tons.
- Winch rating up to 24,000 lbs.

SCHWARTZ MAKES IT A ONE-MAN JOB!

Now, with a SCHWARTZ RAMP HOIST, *one man* can load, transport, and unload those hundred and one pieces of equipment that do not justify the use of heavy duty low-boy trailers. With the ramp lowered, both mobile and other equipment can be winched onto the ramp and safely transported. The low cost of the SCHWARTZ RAMP HOIST will be quickly paid for in savings on time and labor.

Write to Dept. RH-13 for complete information.

SCHWARTZ MANUFACTURING COMPANY
Lester Prairie, Minnesota

For more facts, use Request Card at page 18 and circle No. 346

GENUINE
CROSBY CLIPS
Standard of the Industry

FOR GREATER SAFETY SPECIFY THE CLIP WITH THE RED U-BOLT.®

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Ask your Crosby Clip Distributor for catalog listing the most complete line of forged fittings for wire rope and chain

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CROSBY-LAUGHLIN *Division*
FORT WAYNE, INDIANA

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maintenance



This Ford F7 tandem-axle truck visits each piece of equipment daily on a number of small jobs done by Leo F. Piazza Paving Co., San Jose, Calif. The operator is filling the fuel tank of the D8 while the maintenance man greases the tractor.

One lube rig for 12 spreads

Fuel and lubrication for more than 30 machines is provided by one-man rig covering 100 miles daily

One serviceman with a big, well equipped lube rig fuels and services more than 30 pieces of equipment daily for Leo F. Piazza Paving Co., San Jose, Calif. Since the machines are usually scattered over a number of small jobs, the service rig averages more than 100 miles of travel per day to reach them all.

Much of Piazza's work is clearing, grading, and paving on new subdivision developments. On any given day, the machines will be spread over as many as 12 jobs at different locations scattered throughout the rapidly growing Santa Clara Valley area. But they all get their daily fuel and service visit.

The service truck, the vital rig in this efficient operation, is not only loaded with the necessary equipment, but is also decked out in a flashy red and yellow. It does a good job of advertising for Piazza as it travels from job to job around the area.

Two big tanks mounted right behind the cab of the Ford F7 tandem-axle truck carry the supplies of fuel. The first is a 1,200-gallon diesel fuel tank, and the second is an 800-gallon gasoline tank. The fuel-dispensing pumps, which are mounted at the rear of the 18-foot-long truck bed, are powered from the truck engine through the power takeoff. The 1½ and 1-inch fuel dispensing hoses are carried on reels mounted on the rear corners of the bed.

Pumps dispense lubricants

Across the back of the truck between the fuel hose reels are five Lincoln reels for oils, greases, and water supplied under pressure. Water in a 100-gallon tank is carried under 70 pounds of air pressure. Two built-in tanks with capacities of 125 and 150 gallons carry the supplies of engine oils for gasoline and diesel engines. Three barrels on the truck carry the two types of grease and hydraulic oil. Lincoln and Graco air-powered pumps deliver the lubricants from the containers to the hose nozzles.

An Ingersoll-Rand gasoline-powered compressor supplies air for the grease pumps and the water tank. A hose reel mounted on one side of the truck is connected to the compressor tank to provide air for tires or other uses.

Electric power for lights or power



HEAVIER OUTSIDE WIRES mean great resistance to abrasion. FINER INSIDE WIRES mean excellent drum winding characteristics.



In REGULAR LAY ropes the wires are laid in a direction opposite to the lay of the strands. This provides stability even under severe operating conditions.

In LANG LAY ropes the wires and strands are laid in the same direction, providing exceptional flexibility and abrasion resistance.

Two ropes in one! Roebling Herringbone® Wire Rope is designed and made to wear better, work better, last longer than you can possibly imagine . . . unless you've tried it yourself!

Herringbone combines two pairs of Lang Lay strands with one pair of regular lay strands to give you maximum flexibility, good stability, mighty strength. Call your Roebling Distributor — or write for details to Roebling's Wire Rope Division, Trenton 2, N. J.

HERRINGBONE WIRE ROPE

ROEBLING

Branch Offices in Principal Cities
John A. Roebling's Sons Division
The Colorado Fuel and Iron Corporation

For more facts, use Request Card at page 18 and circle No. 848



The bright red and yellow rig carries a 1½-inch hose, right, for diesel fuel from a 1,200-gallon tank and 1-inch hose, left, for gasoline from an 800-gallon tank. Smaller reels dispense water, four grades of grease and oil, and air. A Kohler 1,500-watt generator and an Ingersoll-Rand compressor are also on the rig.



The door of a compartment for small tools serves as a workbench while the maintenance man cleans the tractor's air cleaner.

tools is furnished by a Kohler 1,500-watt generator.

At the rear of the truck bed, a door swings down to become a workbench for such operations as servicing the air cleaners. The door opens on a compartment carrying the serviceman's tools, a supply of wiping rags, and other necessities.

All servicing equipment is carried on the open flat bed of the truck without any type of enclosure. Since Piazza's work is almost exclusively in the Santa Clara Valley, there is little or no need for protection from the weather. When the winter rains start, it is usually impossible for the equipment to continue working in the field. Most of it is brought into the shop for overhaul or repairs during the few months when rains threaten. This means that the service rig rarely gets caught in the rain.

Grading and paving spreads

Piazza's equipment includes primarily grading and bituminous paving spreads. Cat D8 tractors and DW15 scrapers handle much of the clearing and earthwork. Two Northwest 80-D shovels and a fleet of trucks make the excavations scrapers cannot handle. In the paving spreads are two Cedarapids bituminous pavers, Buffalo-Springfield and Huber-Warco rollers, and Cat 12 motor graders. Piazza operates a 6,000-pound Madsen asphalt plant at the central yard.

In order to get around to all of these spreads each day and to keep lost time to a minimum, serviceman Pete Burum starts his day at 4 a.m., catching the earthmoving spreads before they start work. He then finishes the rounds, servicing the other machines during their working hours.

Leo F. Piazza heads the construction company that bears his name. The master mechanic for the firm is O. M. Johnson. THE END

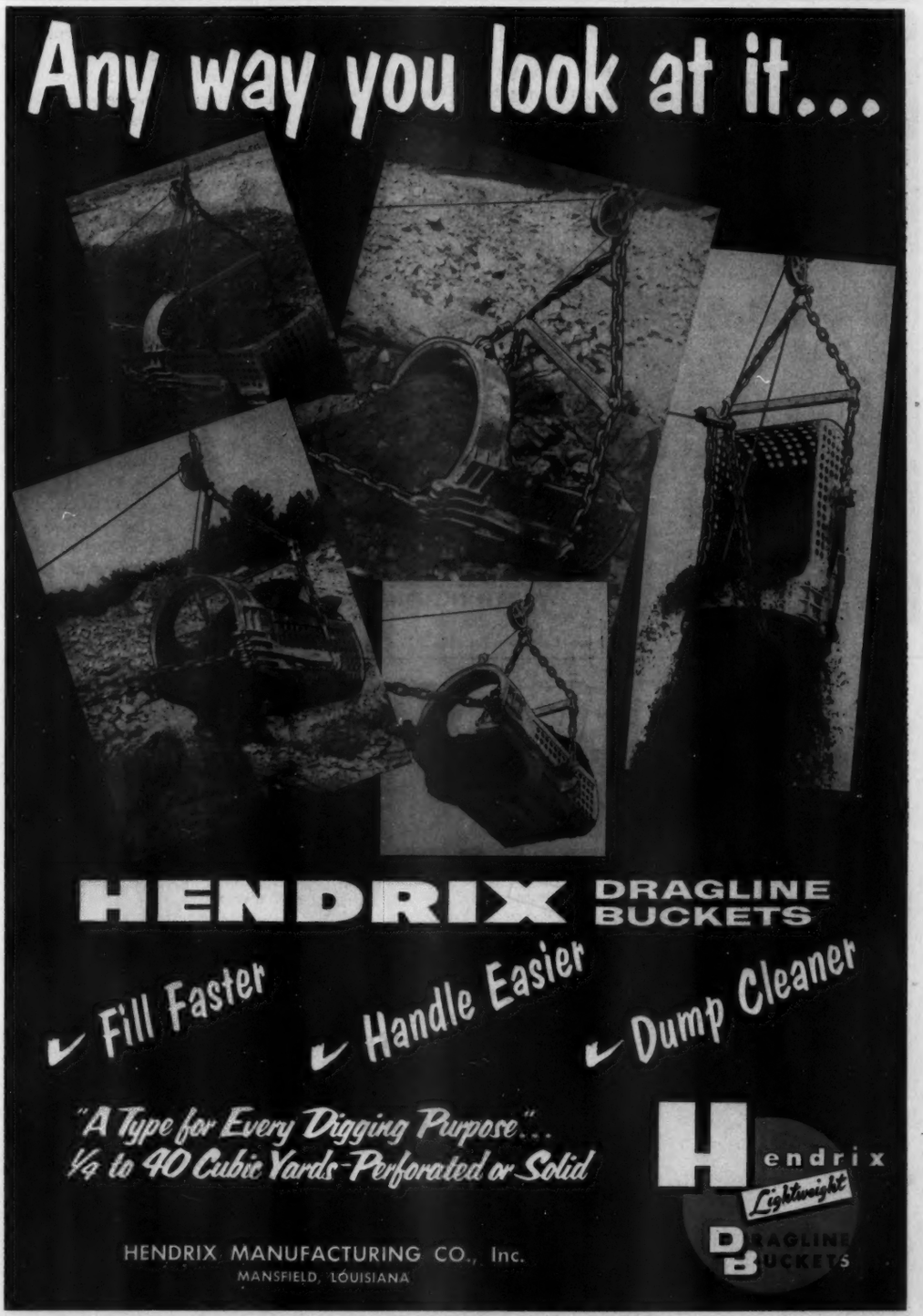
Wisconsin Trailer news

■ The Wisconsin Trailer Co., Inc., Richfield, Wis., has moved into new manufacturing and administrative quarters. An infrared heating system is used in the cement-block building. Two assembly lines and two overhead crane systems contribute to an increased production capacity of about 60 per cent.

New book on roof framing

■ A complete manual has been published on roof framing, bringing together the direct graphic or pitchboard development method and the more technical framing square method. "Building Construction: Roof Framing" is arranged in four sections: rafter layout theory, mathematics, shop drawing, and job assignments. It contains over 200 illustrations that show the application of the framing square to the cutting lines of roof members. The authors, Alonzo Wass and Gordon A. Sanders, have treated each roof member individually.

The 185-page book costs $5.75 and is available from Prentice-Hall, Inc., 70 Fifth Ave., New York 11, N. Y.





Any reasonably level spot beside the road becomes the field shop during grading of a highway in a remote section of Wyoming by Ace Construction Co., Omaha. Two Fruehauf 32-foot vans carry parts, cable, and shop tools to serve the spread. Workmen are using a Lincoln welder for some repairs on a DW21 scraper.

Maintenance miles from nowhere

Maintaining a spread of earthmovers working in a remote location requires emphasis on preparedness. Careful daily servicing is essential to keep the machines in good running order. And having the right parts on hand when something does break down saves days and dollars.

This was the situation faced by Ace Construction Co., Omaha, as it tackled a 2-million-yard grading job on a new alignment for Interstate 90 west of Sundance, Wyo. The field office and shop setup for the job were relatively simple but adequate.

A level spot of ground beside the road became the job shop. Flanking the area on two sides were Fruehauf 32-foot trailers carrying the job stock of parts, cable, shop tools, and other items. Nearby was the 45-foot office trailer that was job headquarters during the work.

Radio communication was very important here. General Electric and Motorola mobile radios kept the office and shop in constant touch with the field crews. A mobile telephone, linking the office to distant places, facilitated the ordering of parts and supplies.

The grading spread of Cat machines depended for parts on West River Equipment Co., Rapid City, S. Dak., just 60 miles away. But supplies came by bus from Rapid City to Spearfish, then by truck to Sundance, and then over 10 miles of dirt road to the job. In a real emergency, someone might drive to Rapid City and bring back parts in three or four hours. Otherwise, delivery took more

BUILT-IN RUST PROTECTION

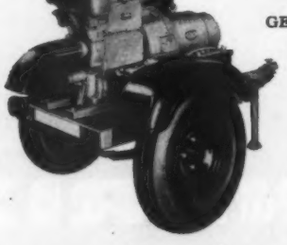


Blue Brute Air Tools give you a big money-saving feature—they resist rust and corrosion. The reason is an exclusive process: Blu-Coated Parts.
With Blu-Coated Parts Worthington Air Tools operate better job after job and in damp atmosphere. They resist wear, seizing, galling. They hold oil better. Even after your toughest jobs you can store them for months without deterioration.
Blu-Coated and Worthington Distributor's Guaranteed Availability Plan keep your jobs going even if your tools are in for checkup or repair. GAP works this way: 1) bring in your Blue Brute tool for repair. While it's in distributor's hands he will, 2) lend you an air tool to keep your job going. See him for complete details, about Blu-Coated, GAP, and assured parts and replacements. 60-15

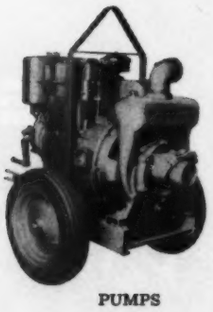
WORTHINGTON

For more facts, use Request Card at page 18 and circle No. 350





GENERATOR



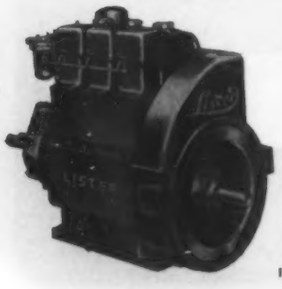
PUMPS

— to rental equipment suppliers to investigate low-cost, high profit, dependable operation of

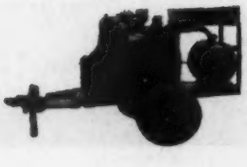
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—by Lister

MODEL SL3



COMPRESSORS



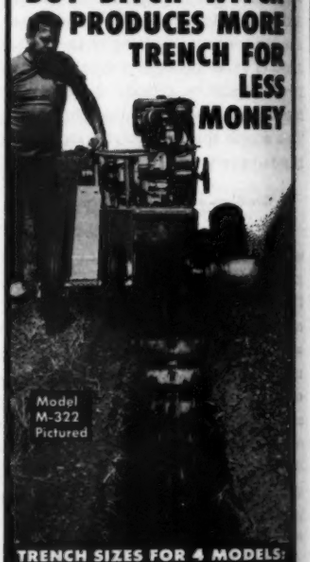
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42-32 21st Street, Long Island City 1, N. Y. Tel. STillwell 6-8202
In Canada: Canadian Lister-Blackstone, Ltd., 1921 Eglinton Ave., E., Toronto 13, Ontario

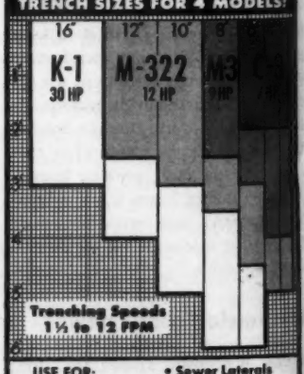
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For more facts, circle No. 352



maintenance

than a day. Naturally, Ace kept the parts trailers well stocked with the bearings, sheaves, and other parts commonly needed.

Field crews worked double 8-hour shifts, and two mechanics kept the equipment in repair. Each had his own pickup so that he could get to any part of the job in a hurry.

Field servicing

The lubrication and field servicing were also handled by two men, one working on each shift. They used a Ford F6 grease rig equipped with Graco pumps and reels, and a Schramm compressor. Each had a generator to supply power for lights and tools. All of the equipment was serviced once daily.



The job office used by superintendent E. I. Sorenson, left, and resident engineer C. J. Toner is an air-conditioned trailer. The telephone company designated the field setup as Ace, Wyo., to identify the location of the job's mobile telephone.

At the end of each shift, all of the rigs were fueled by the servicemen. A 9,000-gallon tank provided job storage for diesel fuel; a tank truck delivered it to the rigs on the job. Standard Oil Co. fuels and lubricants were used.

Although the job servicemen were equipped to make tire changes and do their own tire maintenance, they usually called in a Firestone service rig to handle the big tires. THE END

GE traffic movie

■ "Millions on the Move," a 16-mm, 27-minute sound and color film, presented by the General Electric Co., points out how coordinated public transportation is the key to the problem of congested traffic. Examples show how outlying parking areas, rapid-transit vehicles, and modernized rail and bus facilities have stimulated traffic flow in several cities.

The movie is available for free loan to community groups located within a 75-mile radius of cities with a population of 75,000 or more. Prints may be obtained from distribution centers of Association Films, Inc., at Broad and Elm, Ridgefield, N. J.; 561 Hillgrove Ave., La Grange, Ill.; 1108 Jackson St., Dallas, Texas; and 799 Stevenson St., San Francisco, Calif.



Case history: For work in confined areas, such as inside buildings or small yards, or for cleanup work on major operations, Portland Structures, Inc., of Portland, Ore., reports good results with its Alligator 1-ton crawler tractor. The firm uses the Alligator for backfilling, leveling, and cleanup work, and keeps it busy most of the time. The machine is powered with an 18-hp 2-cylinder engine, and lifts a full ½ yard or 550 pounds. Attachments are available for forking, scooping, scraping, power takeoff, hoeing, high-lift loading, and other work. For further information write to the **Alligator Equipment Co.**, Dept. C&E, 4927 Delmar Blvd., St. Louis 8, Mo., or use the Request Card at page 18. Circle No. 122.



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Report on Joint Venture by Frazier-Davis Construction Co. and Hunkin-Conkey Construction Company.

"An Eimco 630 Excavator is loading an average excavation progress of 15 feet per working day in 18 foot diameter shafts in rock. Average mucking time is 6.25 minutes per three cubic yard bucket or 28.8 cubic yards per hour. One operator has averaged as high as 30.9 cubic yards per hour for a two week period. Part of this mucking operation is accomplished inside the concrete forms with a working diameter of only 15' 4". Average shaft progress is 9.41 feet per day, including concrete lining and utilities."

So reports A. Leavitt Crowell, Project Manager for Frazier-Davis Construction Company on two vertical shafts for International Salt Company at Whiskey Island, Cleveland, Ohio.

Shafts will go about 1,900 feet and with two Eimco 630's on the job, you may be sure the job will be completed fast and economically. Proven in service around the World, the Eimco 630 is reliable, tough and efficient.

Get all the facts! Contact the Eimco sales office or dealer nearest you, or write The Eimco Corporation, P. O. Box 300, Salt Lake City 10, Utah, U.S.A.



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A mobile field shop set up beside the main haul roads is the key to efficient maintenance operations at Navajo Dam in New Mexico. Minor repairs on a Euclid end-dump are handled near a well stocked Fruehauf 40-foot shop trailer.



One of the mobile lube rigs and the job fuel truck pull into a field service station to service the rubber-tire equipment. This station's 10,000-gallon and 7,500-gallon fuel tanks are replenished by Standard Oil Co. transports.



maintenance

Field shop promotes main-shop efficiency

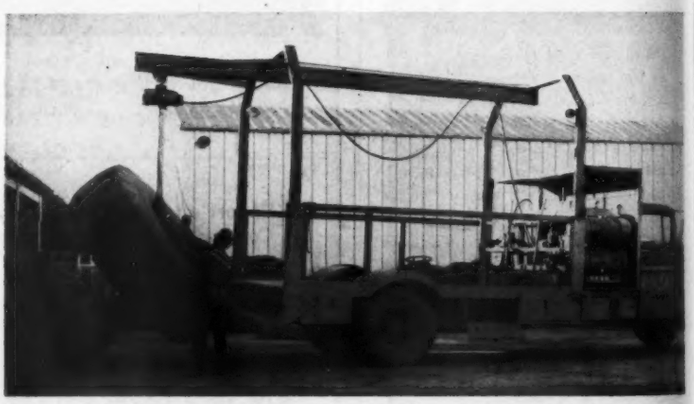
Main repair facility is free to handle major overhauls as field men do minor repairs on rigs at New Mexico dam



A Euclid TSS-24 scraper stopping for fuel and lubricant has both engines fueled, oil checked, and a complete lubrication job done. On these stops, the operator tells the field mechanic if anything seems wrong with the rig, and minor repairs are made immediately.

At Navajo Dam, PM means Preventive Maintenance, but it even more emphatically means "prevent problems." Important in this effort to prevent minor repairs from becoming major problems is the use of a portable field shop, set up adjacent to the main haul roads. Here, field mechanics are always in close touch with the equipment operators.

This system has two big advantages. First, the field mechanics can



The contractor's own tire rig, a Chevrolet truck with a monorail and Gardner-Denver-Keller air hoist, is capable of handling 1,700-pound 27.00×33 earthmover tires. General tires were used almost exclusively. The rig provides an emergency air supply.



The service crew makes a routine daily check of three Essick vibrating rollers pulled by an Allis-Chalmers HD-21. The 6-foot-long, 48-inch-diameter rollers, powered by Continental engines, are used to compact pervious and random materials in zones 2 and 3 of the dam.



Field lube and fuel rigs service one of the Allis-Chalmers HD-21 tractors working on the fill with a dozer and a rear-mounted scarifier. The Chevy lube rig has Lincoln pumps and reels for several grades of oil and grease, torque-converter fluid, gasoline and water.

detect and repair minor faults while they are still minor, and these repairs can be made right on the job, usually without taking the rig out of service. Secondly, this leaves the main shop free to concentrate on major checkups and overhauls without the usual frequent interruptions from rigs needing only minor repairs or adjustments.

A central service station is also set up out on the job near the haul roads most used. All of the rubber-tire machines pull in here once each shift for fuel and lubrication. Obviously, it is most advantageous to locate the mobile field shop near the central service station. This, however, is not always feasible because the use of the haul roads varies greatly from time to time as the job progresses.

In the general shop area, the main shop building includes a warehouse and the equipment superintendent's office. A series of Butler metal buildings serves as lubrication headquarters, body and paint shop, automotive and electrical shop, and tire shop. A specially equipped truck that handles the big tires is operated by the contractor.

Navajo Dam, one of the four main units of the Upper Colorado River Storage Project, is located on the San Juan River some 39 miles east of Farmington, N. Mex. It will be a 26,300,000-yard earth and rock-fill dam 3,700 feet long and rising 338 feet above the river bed. The builder, working under a $22,822,642 U. S. Bureau of Reclamation contract, is a joint venture of Morrison-Knudsen Co., Inc., Boise, Idaho; Henry J. Kaiser Co., Oakland, Calif.; and F & S Construction Co., Butte, Mont. A big spread of equipment, spearheaded by some unusually large individual machines, has the job well ahead of schedule and apparently headed for early completion.

Field shop

The field shop is a 40-foot Fruehauf trailer that serves as a base for the field mechanic foreman and his crew. It is stocked with cable, bits, keys, filters, and other regular replacement items. Inside is a workbench with vise, power grinder, and other tools. Electric power is run to the site to operate tools and provide lighting.

The men who work out of the field shop also have the usual service trucks, but the shop carries a much larger and more complete stock of parts than could be carried in one of these trucks.

When a machine breaks down on the job, the field mechanics service it right where it is—if such service will get it back in operation. If major work is indicated, the machine is moved by low-bed trailer to the main shop.

The most important work of the field mechanics, however, is the replacement of cable, bits, and other items, and handling adjustments and minor repairs. When a rig stops for fuel and lubrication, one of the mechanics gives it a quick visual inspection. He also talks to the operator,

(*Continued on next page*)



The main filling station and lubrication headquarters are located in the general shop area. Tanks hold 34,000 gallons of diesel fuel and 10,000 gallons of gasoline. The big field fuel truck picks up its supply here.



Radio control keeps everyone on the go by keeping drivers in the know!

What caused your last work stoppage? Could it have been prevented by radioing your foremen and supervisors the exact job condition—letting them send their trucks directly to areas where materials or equipment were needed immediately? How much time and money would you have saved? Take your own work. How much time can radio save you in conferring, checking, planning, and trouble shooting?

Ask a nearby Motorola 2-way radio user. Learn firsthand how you and your foremen can become more productive—saving miles and minutes with each 2-way radio message.

Why Motorola? You get highest dollar value! 1. A custom-planned system engineered to your specific requirements—Motorola assumes complete responsibility for your system. 2. The right equipment—from the world's most complete line of communications tools—Motorola has thousands of installations in every conceivable type of vehicle. 3. Unmatched reliability, proved by the majority of the nation's utilities, police, fire and transportation services—the professional buyers of 2-way radio. 4. Motorola service by factory-trained technicians from nearby maintenance centers—keeps your system at factory peak performance for long-lasting service and satisfaction. These are some of the reasons Motorola outsells all other makes combined!

Call your local Motorola Factory Sales Engineer—or write today to see how 2-way radio can most profitably serve you. For companies with operations abroad—Motorola sales and service are available in 50 countries throughout the world.

MOTOROLA 2-WAY RADIO

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For more facts, use Request Card at page 18 and circle No. 354

(Continued from preceding page)



During the lunch break, when rigs are stopped, a Euclid TC-12 push-tractor is serviced by the Chevrolet lube truck.

who may have observed some operating fault that can be remedied by a field adjustment on the spot. Correcting these troubles in their very early stages keeps them from becoming serious.

The field mechanics can often detect and correct troubles the machine operator might not even think to report. But operators, hesitant to drive the big rigs all the way to the main shop for a minor adjustment, generally make a full report to the field mechanic.

Another important advantage of the arrangement is that when a breakdown does occur, the field crew is close by and can get at it immediately. Having worked on this machine practically every day, the crew can probably make a quicker and more accurate diagnosis of the trouble than could be made by others.

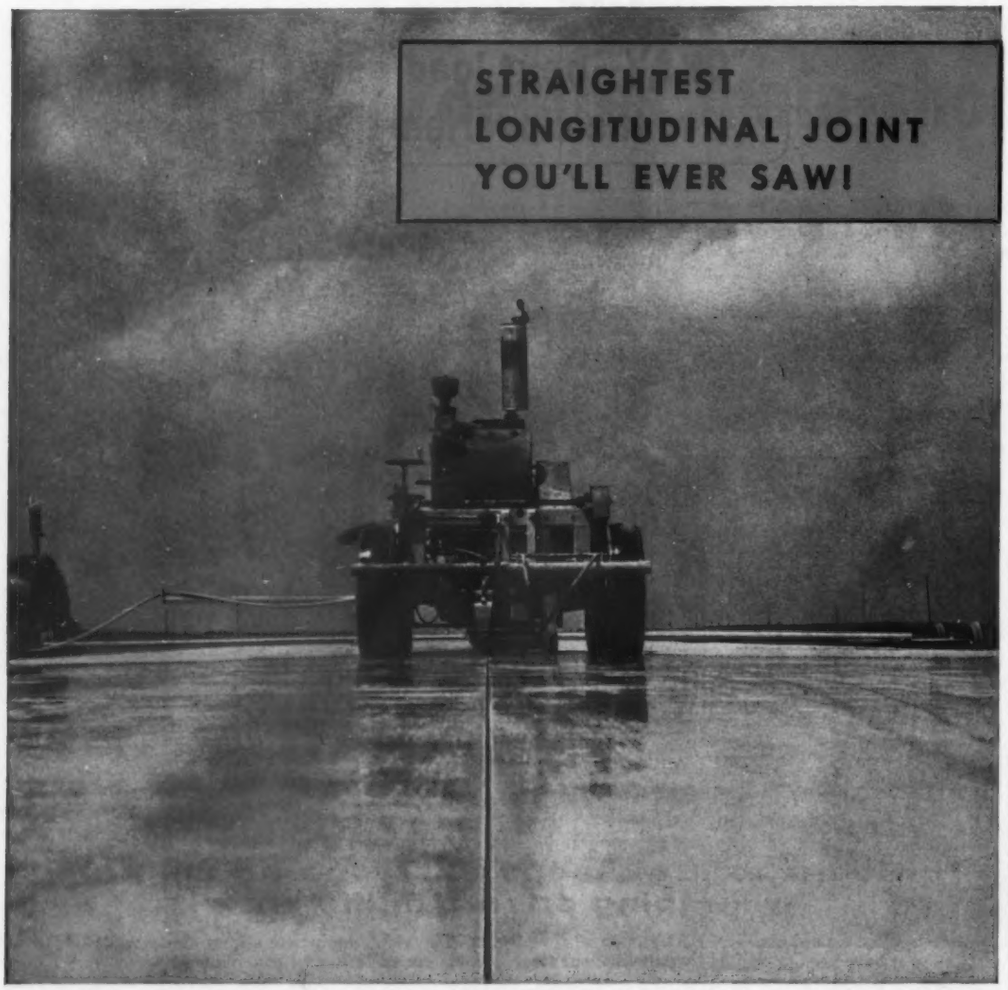
Early in the job, the field shop was located on the upstream side of the dam. At that time, much of the material was coming from upstream borrow areas, and a spot near the junction of the main haul roads from these areas was a logical location.

After the closure was accomplished last winter, the heavy work load shifted to the downstream side of the dam, and the shop was moved to a new location. It was set close to the central service station where maximum efficiency and economy could be realized.

Central service station

The central service station provides fuel and lubrication service to all of the heavy rubber-tire equipment, which includes 35 or more Euclid end-dumps, bottom-dumps, and scrapers. The station has two diesel fuel tanks, one of 10,000-gallon and one of 7,500-gallon capacity. Two electrically powered pumps dispense the fuel to the rigs.

In a space between the two tanks, a lubrication setup is located. Four Lincoln pumps and reels dispense motor oil, chassis lube, gear grease, and torque-converter fluid. As the "Eucs" pull into the station one at a time, they are fueled, lubricated, and checked. Air cleaners are replaced, and the field mechanic makes a visual inspection as he consults with the operator. Even on the TSS-24 2-engine scrapers, this entire service operation is completed in five minutes. The contractor estimates that the central station probably eliminates as many as seven field service men and gets the job done better than mobile rigs.



U. S. Highway No. 10 near Tappan, North Dakota. Northern Improvement Company, Contractors.



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Supplies of diesel fuel are delivered directly to the field service station by the Standard Oil Co. of Texas in big truck transports. Standard also furnishes the motor oil. Grease and torque-converter fluids are supplied by the D-A Lubricant Co., Inc.

Two mobile lube rigs and a fuel truck service the tractors and other machines that cannot conveniently get to the central service station. The Chevrolet lube trucks carry 9 Lincoln pumps and reels to dispense the several grades of oils and greases, as well as torque-converter fluid, gasoline, and water. Each rig has a Curtis compressor and carries a General Pacific fire extinguisher.

Fuel is delivered to this equipment by a big White fuel truck with a tank capacity of 3,000 gallons. The rig is equipped with 100 feet of 1¼-inch hose carried on an electric reel. The dispensing pump operates from the power takeoff of the truck and can deliver 50 gpm.

The fifteen men of the lubrication staff are split up in three shifts to correspond with the around-the-clock job operation. On their normal schedule, they service the bottom-dumps and end-dumps every shift and the scrapers and tractors twice in every 24 hours. Oil and filters are changed at 100-hour intervals—on weekends when possible. Torque converters are drained and refilled every 500 hours. Complete and detailed records of all servicing make this scheduling possible and provide permanent evidence of just what is done.

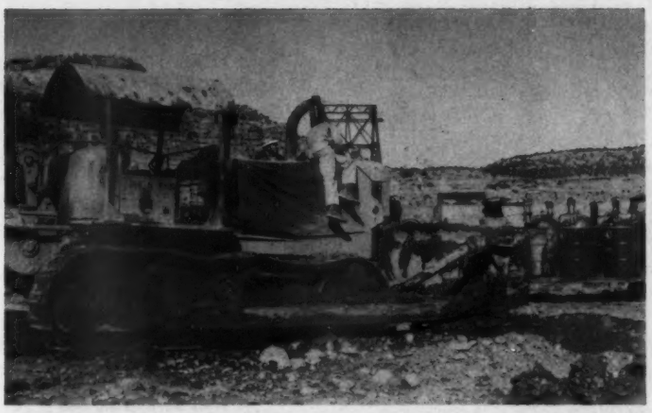
Main shop handles overhauls

Because of the activity of the field mechanics, the relatively small main shop easily handles the major mechanical work for the entire spread. This spread includes more than 130 major pieces, ranging from automobiles and pickups to the big Monighan dragline, as well as many smaller units.

The 40×120-foot Butler shop building has three drive-in stalls served by an 8-ton overhead crane. On an apron beside the shop, each piece of equipment is thoroughly cleaned by a Malsbary steam cleaner before the machine enters the shop.

A machine gets into the main shop on one of three grounds: It has broken down and needs major work; the operator's daily report (confirmed by the field mechanic) indicates the need for major shop work; or the preventive-maintenance schedule calls for a major checkup.

(Continued on next page)



One of the biggest problems on the job for lube and maintenance men was caused by mud accumulating on the rigs. This Allis-Chalmers HD-21 being worked on by servicemen works with a dragline in a wet, unstable area loading pervious and random material for the dam.

DIESEL ENGINE GENERATOR SETS

Immediate Delivery from Inventory!



Any voltage; 50 or 60 cycle. Available in stationary, mobile or portable model. Following listing is only partial.

2000 kva Fairbanks-Morse model 33F16 (photo above)
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1375 kva General Motors model 278A
1250 kva General Motors model 567
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412 kva Worthington model CC
375 kva General Motors model 268A
312 kva General Motors model 268A
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CLEVITE 77 (the bearing preferred by O.E.M.) with patented cast copper lead tri-metal construction provides greater load carrying capacity and longer life.

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MONMOUTH *Engine Bearings*

CLEVITE SERVICE: Cleveland Graphite Bronze • *Division of Clevite Corporation* • Cleveland 3, Ohio

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Before any equipment comes into the main job shop for work, it gets a thorough cleaning by this Malsbary steam cleaner located in a small building next to a paved ramp located just outside the shop.

(Continued from preceding page)

As a machine enters the shop, a mechanic's repair card is attached. This card carries the complete information on what has been done on the machine by each mechanic who works on it. When a new shift takes over, the men have the record of what the previous shift has done and can carry on without loss of time or effort. The record of what is done to each machine is carried over in the shop office to the master records, which tell the complete story of each machine's operation and maintenance.

Truck handles big tires

On this job, the contractor operates the tire maintenance program. The specially equipped tire service truck, with its complete stock of air tools, serves as a mobile air supply for many purposes other than the changing of tires.

The flat-bed Chevrolet truck has a monorail running the length of the rack and extending over the rear. A carrier on this monorail holds a Gardner-Denver-Keller air hoist that handles even the 1,700-pound tires with ease. At the front of the bed is an Ingersoll-Rand 85-cfm Gyro-Flo compressor. Three Ace hose reels make it convenient to inflate tires or operate air tools.

Tire repairs, with the exception of sections and caps, are made in the job shop. Caps, sections, and new tires are supplied by The General Tire Co.

Lubrication and fueling for cars, pickups, and the smaller trucks are done at the lubrication shop and service station in the main shop area. Fuel tanks hold 34,000 gallons of diesel fuel and 10,000 gallons of the two grades of gasoline. The job fuel truck loads here. A dock at truck-bed height carries the lubricants.



C. L. "Chet" Dapron, left, equipment super for the joint-venture contractor, confers with Darrell Newton, preventive-maintenance foreman.

Heading the equipment maintenance staff is equipment superintendent C. L. "Chet" Dapron. Assisting him are preventive-maintenance foreman Darrell Newton and lubrication superintendent J. R. Williams.

THE END

Rental-rates directory offered in new edition

The 1960 edition of "Rental Rates and Directory" is now available from Construction Equipment Owners Association of B. C., Canada. The book, which is revised yearly, is published as a service to the industry, and provides a ready reference for users of construction machinery.

The book, which is sent to a mailing list of over 3,500 engineers, architects, and construction companies in the province, may be purchased from the association office at 969 W. Broadway, Vancouver 5, B. C., at a cost of $2, plus a 5 per cent tax.

Maginniss motor-in-head concrete vibrators—best for every job!

Use the right tool...

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maintenance

Earthmover tires get bigger and bigger—and so do the flats. When a 10-foot-high tire collapses, a contractor has a king-size problem.

Around Des Moines, Iowa, however, most contractors turn their tire problems over to a service company to get the job done in a hurry.

The Goodyear Service Store in Des Moines is an outfit with a particularly good record for helping a contractor with tire troubles. At any hour of the night, a serviceman will leave a warm bed to change a cold tire. Generally, within an hour, the serviceman is on the job. Within a few more hours, the flat is fixed and the machine is back moving dirt.

When a contractor needs a new set of tires on short notice, they are usually available. The service company keeps about fifty tires in stock to meet the demand of local contractors and industrial concerns.

Worn tires can be retreaded in a short time. It takes only two days for the Goodyear Retread Plant in Des Moines—a separate organization—to do the job.

Much of the work is done in the field with the company's service truck. Mounted on the International 2½-ton truck is an air-powered lift for handling the heavy tires. Punctures and tube damage can be repaired in the field, but if there are breaks or cuts in the wall, the tire must be taken in to the retread plant for repair work.

Tips on care of tires

Service manager Ralph Bell has seen a lot of flats in his years with the company. He says that many of them could have been avoided if tires had been given proper care. He has several prime recommendations for contractors.

(Continued on next page)



Contractors in the Des Moines area are used to the fast and dependable service provided by the Goodyear Service Store in the city. The crew is loading a 33.5×33 26-ply tire onto an International 2½-ton truck that will head out to an earthmover needing field service. An air-powered lift handles the heavy tires.



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New crawler mounted Calweld Drills offer more!

More features... More digging power... More speed!

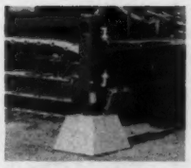
Check the features...



Hydraulic down pressure (50,000 lbs.) for faster digging in hard substrata.



Hydraulic dumping arm for faster, safer dumping.



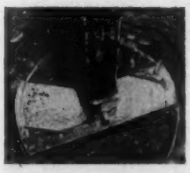
Hydraulic operated outriggers (box type).



50-ton capacity for pulling casings using hoist and crowder hydraulic rams.



Triple telescoping kelly bar for drilling to 90 foot depth.



Special bucket drills: rock grab, coring bucket, tungsten carbide rock drill and others.

In a class by themselves—Calweld Drills are BIG and do a *big* job—drill any size hole from 10 inches to 10 feet in diameter and 200 feet deep.

It's the contractor's drilling rig—because a Calweld does so many jobs—digs caisson pier holes, digs belled footings, pre-bores concrete piles, drills dry wells. Excellent for subsoil sampling and exploration.

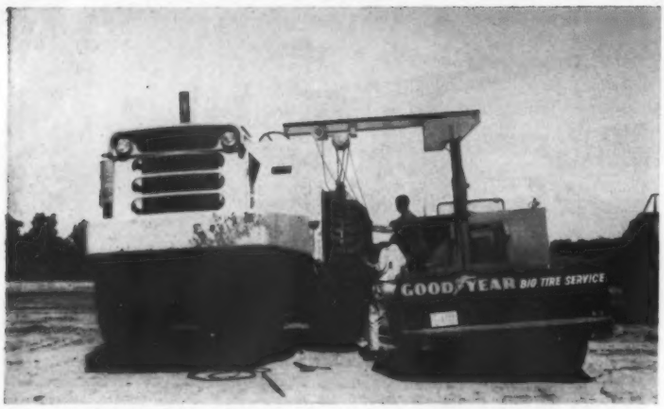
Write for 16-page illustrated Methods Manual for job facts and figures.



CALWELD DRILLS

CALWELD, INC. 7222 E. Slauson Avenue
Los Angeles 22, California

For more facts, use Request Card at page 18 and circle No. 362



A service crew changes a tire on a Michigan 310 scraper for Mickle & Ross Construction Co., Newton, on a Sunday when the job is shut down. The contractor is working on an Interstate grading contract located east of Des Moines.

pany has been selling more and more tubeless tires. Contractors prefer them over tube tires because they stand up better and are not as likely to have punctures. As a rule, the tubeless tires are also easier to change and repair.

It was eight years ago when the Goodyear Service Store, currently managed by W. R. Carpenter, added the earthmover tire line to its already successful business. At the present time, about 30 per cent of its total volume goes to contractors and industrial concerns. The company is one of about three in the state of Iowa that is equipped to handle big tires. They generally service a radius within 75 miles of Des Moines, but they have gone as far away as 180 miles to help a customer. THE END

Revised edition of book on reinforced concrete

■ A new, revised edition is available of Harry Parker's "Simplified Design of Reinforced Concrete," a standard introductory text on the subject for more than 15 years. Many illustrated examples describe the design of structural reinforced-concrete members and are accompanied by problems to be solved by the reader.

The new edition has been revised to agree with current allowable stresses and specified design procedure. A chapter has been added on the advantages of prestressed-concrete beams.

The book is published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y., and sells for $6.50.

(Continued from preceding page)

1. Haul roads should be kept clear of sharp rocks, chunks of metal, or other objects that might cause a puncture.
2. To reduce tire wear, haul roads should be kept as smooth as possible.
3. Operators should look over the tires at the start of each shift to make sure none are low. (Running on a low tire is particularly damaging to tubeless tires.)
4. Once a week, the grease crew or mechanic should check the pressure of the tires with a gage to make sure they are inflated to the recommended pressure.
5. The operator of a dozer should use caution when pushing a scraper with a blade. Sometimes the sharp blade slips off the push pad of the scraper and cuts into a rear tire.
6. Scraper bowls should not be overloaded. On an overflowing scraper, chunks of dirt or rock fall off the back and bind between the scraper and the rotating tire.
7. In picking up a load, the operator of a scraper should not spin the drive wheels in a futile attempt to assist the push-dozer. Let the dozer do the pushing and save the needless wear on the tires.

Tubeless tires preferred by many

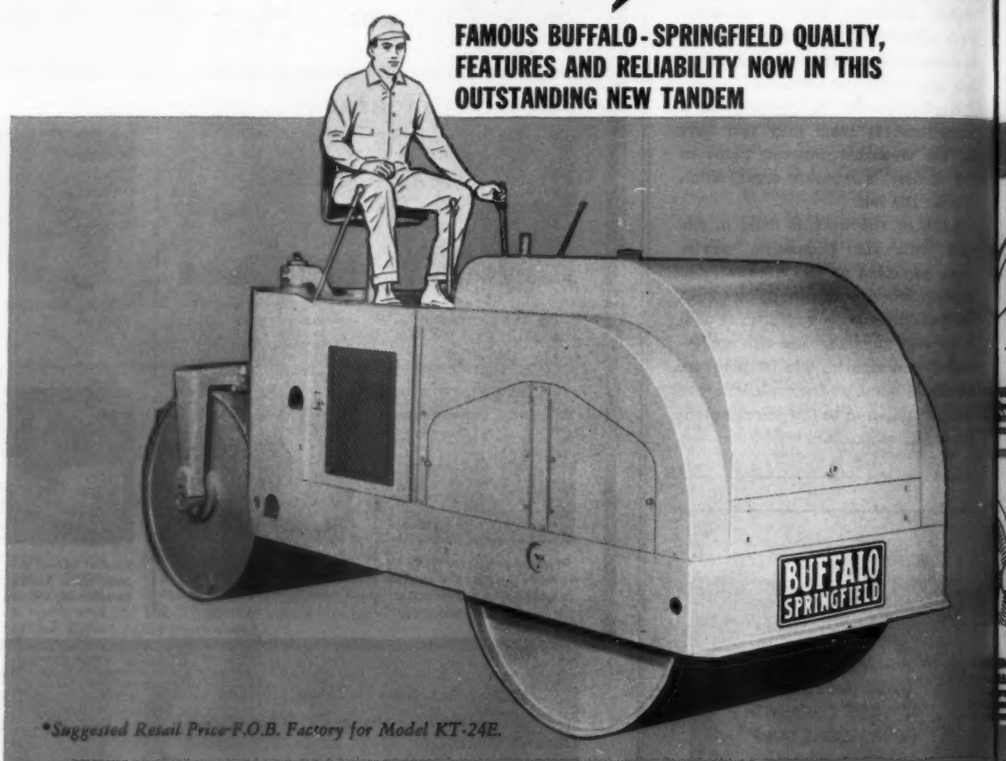
In recent years, the service com-



W. R. "Bill" Carpenter, left, manager of the Goodyear Service Store, and Ralph Bell, service manager, can give contractors plenty of tips on how to lengthen tire life. The Goodyear tire for a DW20, background, is one of about 50 big tires kept in stock.

New Low Price $10,650*

FAMOUS BUFFALO-SPRINGFIELD QUALITY, FEATURES AND RELIABILITY NOW IN THIS OUTSTANDING NEW TANDEM



*Suggested Retail Price-F.O.B. Factory for Model KT-24E.

MODELS

KT - 24 E
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You asked for these new DELUXE Tandem Rollers that combine the job-tested and proved better QUALITY features of the Heavy-Duty Tandem with the ECONOMY of the Standard-Duty model. Now in one great machine you can be sure you'll get more value for every dollar invested than in any roller equipment ever offered before. The cost is slightly higher than some "make-do" rollers on today's market, but each dollar invested in this outstanding Tandem will pay you dividends in lower maintenance, longer life, better performance and top job speed. Talk first to your Buffalo-Springfield distributor. You'll be money ahead!

Facts about filters

A platoon of air and oil filters, in good shape for duty, is essential in preventing equipment breakdown. Manufacturers' recommendations about filter changes are the equipment user's best guide and should be followed carefully. In addition, there are some points to remember about filters that can help contractors in replacing the units and averting downtime.

The purpose of a lube oil filter is to remove abrasives and allow the required flow of oil. It should not return dirt to the oil or hasten the removal of additives.

A lube oil filter should remove abrasive pieces larger than the microscopic oil film separating precision-fitted parts. Smaller particles need not be removed because they cause no measurable wear.

Filters that keep lube oil light remove desirable additives. Oil becomes dark because special detergents hold in suspension the minute particles of carbon created by combustion. With Series 2 or 3 oils, darkening indicates carbon in suspension and a clean engine.

Water is not a filtration problem, since it vaporizes out the breather cap when the engine reaches operating temperature.

The life of a lube filter is affected by such conditions as the type of oil, kind of lube system (full-flow or by-pass), fuel sulphur content, machine application, and type of machine. There are no visible signs of plugged crankcase filters, but it is possible to estimate the amount of external dirt that enters a machine during servicing and operating, as well as the amount of abrasives formed internally by carbon, sulphur-bearing fuel, and minute pieces of worn-away metal. The manufacturer, knowing the dirt-holding capacity of a filter, can make detailed recommendations about change periods.

Hydraulic oil filters, like crankcase filters, give no visible signs of plugging, but it is also possible to estimate the amount of dirt entering them. A hydraulic system must be absolutely clean, great care should be taken to keep out dirt when changing filters, filling with oil, or replacing lines or hoses. The first change of the hydraulic filter in a new machine comes sooner than subsequent, standard change periods.

Primary fuel filters are standard on some tractors and can be installed on most equipment. They are located in the fuel supply line and remove foreign matter before the fuel enters the transfer pump and main filter housing, thus increasing the life expectancy of both these parts. But all fuel filter elements are not the same, and manufacturer's directions are the best guide.

Engine air cleaners are of two types, dry and oil-bath. The dry type has proved more efficient and less expensive. It consists of a filter case that supports the resin-impregnated cellulose filter element and collects dust. The filter element should be inspected and cleaned every 50 to 250 service hours, depending upon weather and amount of dust encountered. Exhaust and oil fumes should be prevented from entering the cleaner, as they shorten its life. The cleaner should be serviced when its restriction reaches 30 inches of water. Excessive engine exhaust smoke or loss of power may also indicate the need for servicing. Dry-type cleaners can be cleaned with air or water and re-used if they are undamaged.

Oil-bath air cleaners may need to have servicing every 5 to 60 working hours, depending upon conditions. Oil in the air cleaner cup should be changed when it becomes thicker than normal, as the cleaner will work efficiently only as long as the oil in the cup is thin enough to spray into the filter sections and wash back the dirt collecting there. The oil should never be changed when the engine is running because this permits dirty oil in the screens to contaminate the fresh supply and also causes too high an oil level. Overfilling prevents proper spray action. Screens should be washed in a pan of kerosene or noninflammable cleaning fluid. The whole unit should be removed and cleaned at least once a year.

Handy conversion tables for U. S., British units

A 48-page pocket-size handbook of reference tables has been published for converting U. S. and British units into metric units and vice versa. Measuring 4 × 5¾ inches, the book has conversion tables in the areas of temperature, volume, weight, liquid volume, pressure, heat, length, surface, and production. Equivalent values are found on the same horizontal line and quickly located by a thumb index.

"Conversion Tables" costs $2.56 postage paid in the United States and its possessions, and $2.75, foreign. There is a 10 per cent discount on six or more copies. The book is available from European Technical Coverage, Inc., 75 E. Wacker Drive, Chicago, Ill.

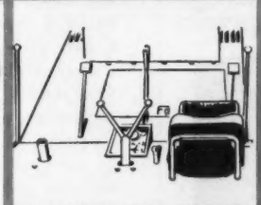
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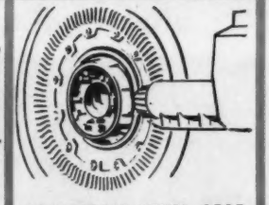
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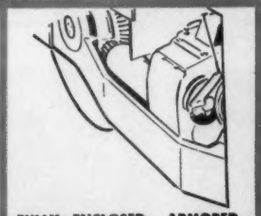
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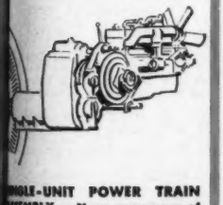
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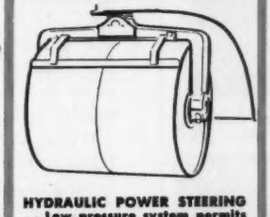
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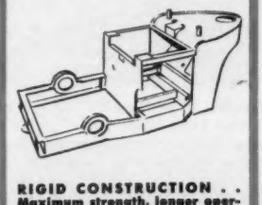
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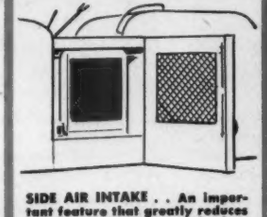
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HYDRAULIC POWER STEERING . . . Low pressure system permits most accurate control for smooth, close rolling with minimum operator fatigue.



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men



The moment of truth for contractors is at hand as John C. Mackie, Michigan state highway commissioner (at microphone) reads bids at a recent highway letting. State employees keeping tally are: Ralph Souchek and Jim Vander Hyde, to the left of the commissioner. To the right are: Hilary Rye, Ed Bellenbaum, Jerry McCarthy, and Herman Morgan.



Some 600 contractors and materials salesmen write down the bids as they are announced. The "bingo" game, with each individual waiting to hear the winning low numbers, was held in the basement of the Lansing Civic Center. At this letting, $20.8 million worth of work was put under contract.

Big letting in Michigan

by BILL ALLEN, field editor

One of the largest bid lettings in the history of the Michigan State Highway Department, held on April 6, gave the state's contracting firms a much-needed shot in the arm. The $20.8 million injection put 36 prime contractors to work on 52 separate contracts. The contractors, assisted by many subs, will build 36 miles of freeways and a number of bridges, and will resurface many miles of state and county roads.

The April 6 letting saw a slight letup in the fierce competition of previous months, but contractors were still grumbling about the low bid prices. In general, they felt that bid prices were too low to permit a reasonable profit.

If more work will boost prices, the Michigan State Highway Department is doing its best to aid the contractor.



Jermaine Rademacher, highway employee, accepts bid from Ivan Schworm, Ivan Schworm & Son, Inc., two minutes before the deadline. Schworm's lone bid of the day was successful.



Father and son doubles. L. M. and Ed Denton of Denton Construction Co., Grosse Point Woods, Mich., give the plans for the job they are bidding a final scrutiny before submitting what they hope will be the lowest figure.



In a pre-bidding conference during the late hours in a Lansing hotel lobby, Grant Bell of C. R. Hunt Co., Cass City, quotes a gravel price to P. Miller of Sparta.



Many a bidder rents a hotel room but never even gets to sleep in it because of all-night pre-letting bargaining sessions. This exhausted contractor flopped down for a couple of hours' rest without even disturbing the sheets of his bed. A set of job plans serves as a spread while he tries to sleep double time.



After the letting, these low bidders smile about their job awards: Jack Hohnke, Cooke Contracting Co., Detroit; Bud Williams, A. J. Williams Construction Co., Southfield; Ken Jarvick, Noland & Jarvick, Centerline; and Ed Argersinger, Argersinger-Morse Construction Co., Ann Arbor.

During the first three months of 1960, the department awarded $35 million in construction contracts. (This figure does not include the $23.8 million of April 6.) The $35 million figure is about $5 million over the equivalent period of last year, and more than twice the dollar volume let during the first quarter of '58.

1960—a record year

For 1960, the department is planning its biggest construction program. It expects to spend from $250 million to $275 million on state and county roads. This is nearly double the $138 million that was spent last year.

Where is the money coming from? Michigan's widely publicized cash crisis has not greatly affected road money. The funds come directly from certain excise taxes, and from gasoline taxes which are earmarked for highway work.

The reduction in federal allotments for the Interstate System, however, has taken a considerable cut into the budget. To make up for this deficit and keep the road program on schedule, the department issues bonds on a 25-year retirement schedule. The bonds will be payed off by using future interstate funds and highway user taxes. Of the $250 million to $275 million program for 1960, about $100 million will be supplied by the federal government.

Contractors are looking forward to more work in 1960, but they have a "wait-and-see" attitude toward the big program promised by the highway department. Still fresh in their memory are the glorious promises of the federal highway program, which materialized much more slowly than expected.

Fewer bidders

The April 6 letting revealed an appreciable drop in the number of bidders per contract, as compared with the two previous lettings. This may indicate a slight easing in the competitive picture. At the letting, an average of 4.7 bids was received per job. This compares with about a 7.6 average for the two previous lettings.

At the April 6 letting, eight jobs over a million dollars were let. The average number of bidders per job on the big money was only 4.4. And one $2 million job had only two bidders. The comparatively low number of bidders may also reflect the nature of the work. Some of the contracts were not desirable from the standpoint of clean, low-risk jobs.

Out-of-state contractors rarely bid work on Michigan highways, because the profits are too small. At this letting, however, S. J. Groves & Sons Co., Minneapolis, came through with two contracts worth $4.4 million.

Subs

Since the state adopted the policy of letting grading, paving, and bridges all in one package on interstate contracts, there have been many subcontractors involved in the work. Nor-

(*Continued on next page*)



Two Michigan contractors swap stories but not bid prices on the eve of the letting. John Pierson (left), Pierson Contracting Co., Saginaw, entered three bids—all too high. Dan Holloway, Holloway Construction Co., Livonia, bid on six jobs, got one.

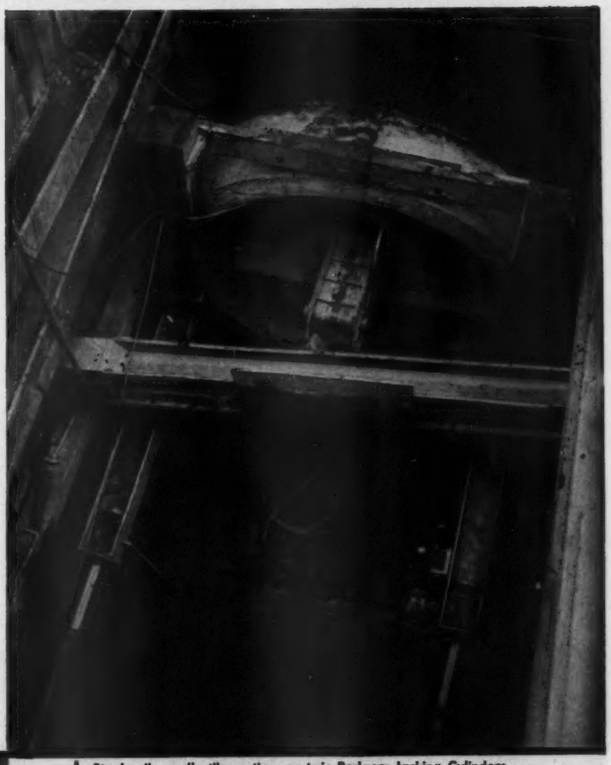


After the cigar stand of the Olds Hotel had closed for the night, C. A. DeLong, superintendent for Joseph Plozai, Inc., and Tom Hefferman, Jr., salesman for Acme-Newport Steel Co., continue to haggle over prices.

MUSCLES under the mainline!

Rodgers Hydraulic Jacks

push three 88 foot tiles under railroad without disrupting traffic



Two 200 Ton Rodgers Hydraulic Jacks were selected by W. J. Irwin & Sons, Inc., Tonawanda, N. Y. for driving three sewer pipes of 96" I. D. reinforced concrete tile 88' under the mainline of the New York Central Railroad. Part of a 2½ million dollar sewer contract on the Tonawanda West Side Drainage Project, the "push pipe" method was preferred because it permitted unrestricted use of the rail right-of-way overhead.

TIME: 34 DAYS—Actual jacking time consumed 34 days based on three-eight hour shifts a day. Each sewer took eleven 8-foot tile sections. The *First Line* required 14 days; the *Second Line* 11 days and the *Third* only 9 days.



JACKING PROCEDURE—A service pit 28' deep by 22' wide by 40' long was excavated to house the jacking equipment. A pair of 75 lb. steel rails placed on the concrete pit floor cradled the tile sections and acted as a guide for the jacking operation. Type of soil encountered in all three pipes was a mixture of heavy yellow and blue clay.

EQUIPMENT USED—Two 200 Ton Rodgers Hydraulic Jacks with 48" ram travel were powered by a Rodgers Model D2 electric driven hydraulic pump located at the top of the excavation pit. A valve panel located at the bottom of the pit permitted accurate control of the jacking operation.

Steel rails cradle tile sections as twin Rodgers Jacking Cylinders press against the wooden jacking frame. Heavy grease on outside of tile cuts down friction—for easier sliding.

Rear of excavation pit showing Hydraulic Jack against abutment wall. At this stage the ram is extended approximately ⅓ of the 48" ram travel.

ADVANTAGES OF HYDRAULIC JACKING—This job was handled at low cost and was unique due to the short time required for completion and the fact that rail service overhead continued uninterrupted throughout the tunneling project below. Entirely different from conventional tunneling, the "push pipe" method also provides greater safety to workers from cave-ins since they work inside the tile that is being driven.

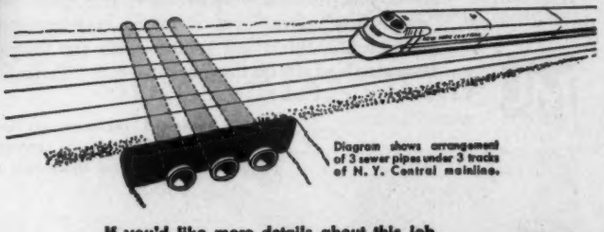


Diagram shows arrangement of 3 sewer pipes under 3 tracks of N. Y. Central mainline.

If you'd like more details about this job, write for free copy of Bulletin 331.

Rodgers Hydraulic Inc.

7415 Walker St. • Minneapolis 16, Minnesota

For more facts, use Request Card at page 18 and circle No. 364



Pencils were sharpened by these two Michigan contractors who picked up bridge jobs at this letting. Eugene Dexter of Raff & Dexter, Lansing, will build ten bridges, while Bud Williams of A. J. Williams Construction Co. has a contract for two structures.

(*Continued from preceding page*)

mally, the prime contractor will do the paving, a subcontractor will do the grading, and a separate subcontractor will build the bridges. Of the 35 bridges let on expressways on April 6, however, only 14 will be built by subcontractors. Generally, the rate is much higher than this.

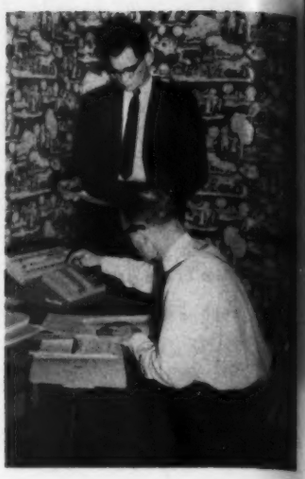
No contractors admit to bid shopping, but suppliers and subcontractors still wait until the last minute before they submit their final prices. They want to make sure that their prices are not undercut.

Contractors and suppliers get together in the lobby of the Hotel Olds, in Lansing, for bargaining sessions that go on until the small hours of the morning. Final steel prices may come through as late as 9 o'clock on the morning of the letting.

Many errors

Since the letting starts at 10 a.m., there is much frantic figuring to assemble the final price of the bid. The last-minute calculating accounts for the frequent errors in the totals of the as-read bids. On the February 17 letting, for example, 40 per cent of the bids received were in error.

The mistakes are generally made in the extensions of the unit price



A hotel room serves as a temporary office where last-minute calculations are made on bids. Ed Denton, vice president, Denton Construction Co., examines Bob Lucas' calculations. Garish wallpaper helped keep them awake through the night.

and in the addition of the subtotals. The bid prices are checked and corrected by the highway department immediately after they have been received. The corrected price, of course, determines the low bidder.

At a recent letting, an error involving the number "1" caused a Detroit contractor to slip from low bidder to third place. The number "1" assumed considerable importance because there were five zeros tied to it. L. W. Lamb Co. of Holland fell into first place on this $3 million contract. As Lamb had already low-bid an adjoining $3 million contract, the second contract came as an unexpected windfall.

Low bid prices—high costs

For the last two years, highway contractors have found themselves in the squeeze between low bid prices and the rising costs of materials and labor. Men, interviewed at the letting, offered several reasons for the low bid prices.

C. J. "Irish" Carroll, executive secretary, Michigan Road Builders' Association, blamed the promises of the federal highway program for causing an overexpansion in the industry.

Superhighways start here



After the planning's done, it takes "axle action" to get America's huge road-building program under way. Rugged, powerful action by thousands of axles on heavy equipment working 'round the clock . . . through all types of terrain . . . frequently subjected to overloads. To minimize costly axle shaft failures, use U.S. Axle Shafts. Finest alloy steels, precision-made by exclusive U.S. processes, guarantee "*extra-duty*" durability . . . reduce maintenance . . . protect your profits. Build *and* replace with the toughest, longest-lasting axle shafts on the market—U.S. "Extra-Duty" Shafts!

Get exact U.S. replacements for every vehicle through your jobber — or contact us for custom-engineered original equipment shafts.

FREE: Valuable booklet, "Causes and Prevention of Axle Shaft Failure" — send for yours today!



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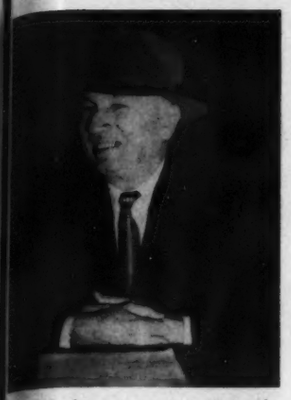
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LESCHEN WIRE PORTER ROPE DIVISION

H. K. PORTER COMPANY, INC.

For more facts, circle No. 366



One of the big winners is L. W. Lamb, president of his own company based in Holland, Mich. Lamb picked up $6 million worth of bridge work under two contracts.

and I hope I'm not next. It looks like the highway department will be giving us more work for the next couple of years, but after they run out of money, things are going to get rough."

Ammon Schreur, president of the Michigan Road Builders' Association, believes that a strong public relations program will help assure a continued volume of highway work and tend to raise prices. "It is in the contractor's own interest to keep his friends, his employees, his congressmen, and the general public informed about the vital importance of road building. Only with the public's backing can tax money be assured for road construction," he said.

Schreur pointed out that "contractors are one of the few business

(*Continued on next page*)

"However," Carroll added, "contractors are to blame for not reading the fine print." By the "fine print," Carroll referred to the inadequate means of financing the program.

"At the present time," said the executive secretary, "Michigan road builders are equipped to do twice the work they are now doing." His opinions were supported by many contractors interviewed at the letting.

Certain contractors put the blame on equipment dealers for making it too easy for small operators to get in the construction business. Easy credit terms allowed them to buy the equipment. In order to meet the big payments, the small contractor had to take work at unrealistically low prices.

How to raise prices

What can be done to help raise bid prices to the point where a contractor can make a legitimate profit?

"Well," said one contractor at the letting, "we either need more work or fewer contractors. Recent equipment auctions by three contractors in Detroit will help reduce the number of contractors. This is the hard way out,

Proposals have been introduced in three legislatures this year to hike motor-vehicle fuel taxes. Increases are 2 cents in Alaska to make the tax 7 cents per gallon, and 1 cent in Arizona and Virginia for a tax of 6 and 7 cents, respectively.

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Control concrete setting with J-M Retardwel...

the hot weather admixture that gives up to 50% higher 24-hour strength

Retardwel®, a product of Johns-Manville, world's largest industrial user of portland cement, is the liquid admixture that controls concrete setting time and prevents premature stiffening due to high temperatures *without* loss of early strength.

Retardwel permits a reduction in the water required for proper placing and provides all the advantages of concrete fabricated with a minimum paste content. Its use delays the initial set of concrete and provides a slower rate of heat evolution, thereby minimizing thermal stresses. Thus, the use of Retardwel will aid in eliminating shrinkage cracks. Only 3 ozs. of Retardwel per sack of cement will control setting time (see chart) and still increase 24-hour strength as much as 50%.

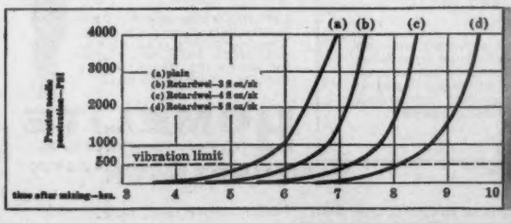
Retardwel's unique properties will also—

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- Improve dimensional stability
- Increase workability
- Reduce permeability
- Increase density

For normal weather conditions, J-M Placewel® is recommended. Johns-Manville's two concrete admixtures have gained the acceptance of architects and engineers throughout the world. For full information write: Johns-Manville, Box 14, New York 16, N. Y.

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(Continued from preceding page)



Michigan Road Builders' president, Ammon Schreur of Pickitt & Schreur, Allegan, urged contractors to help keep the general public informed about the importance of highway construction to the country's welfare.

groups in the country that spend practically no money to advertise their completed product. They let the highway department boost the need for roads. They let manufacturers try to sell the road program to the country. But contractors, themselves, think that their job is finished when they've built a bridge or put down a pavement. This isn't good. Contractors must put more money and time into selling their product to the public.

"The recently formed Better Highways Information Foundation is going to help a lot," Schreur said. "This national organization has recently hired a private public relations firm to supply practical guidance and written material for the job. We expect that the Michigan Road Builders' Association will soon be able to make use of this material."

THE END

A nice friendly game of "low bidder"

A highway letting is a game play with pennies for stakes of a mill dollars or more. The pennies pitched in the lobby of the hotel the eve of the letting. The big-mo winners are announced the next

Taking part in the game in lobby are two kinds of players: th that are buying and those tha selling—the contractors and the p dlers. At first glance, it seems friendly game; men on both sides constantly shaking hands and sho ing the breeze. But every now then a pair gets off in a corner, the pennies begin to get tossed aro in earnest.

"Twenty cents is as low as I c go," says the peddler.

"You'll have to do better that," says the contractor.

"I'm selling this stuff, not giv it away."

"Come down two cents, and we talk business."

These are the early rounds of th game. Most of the players are savi their strength for the final rounds which are fought out in the small hours of the morning. Estimators go up to their rooms for a final bout with the calculator. Salesmen drop down to the bar to see if they can catch a contractor in a more generous frame of mind.

In his room, a contractor named Joe scratches his head as he looks at the total on his bid sheet. "Now, maybe, if I cut ten thousand off this item, I can beat old Jones. But then, if I cut that much, how can I make those payments?" Joe leaves the question unanswered, tosses the bid on the table, and flops down on the bed.

But he's up early—looking for a better price on the steel. He spots the steel man in the lobby. Nobody is shaking hands or saying "Hello" any more.

"Sixteen cents," says the steel man.

"Right," says Joe.

He inserts the figure in his bid, changes his total for the fifth time, and hurries over to the letting. As he hands in his bid, he isn't quite sure whether he hopes he gets the contract or whether he hopes he doesn't.

In the big hall, where the bids are read, contractors and salesmen sit side by side, awaiting the results of the previous night's contest. Slowly, the big numbers fall from the public-address system like pebbles into a quiet pool. "Jones Construction Co.—two hundred and ninety-five thousand, three hundred and thirty-four dollars, and twenty-four cents. That's two, nine, five, three, three, four, point, two, four."

This happens to be the contract Joe is trying to get. He rubs his chin nervously as the numbers come up. "So far, so good," he says to himself after the first three totals have been announced. Then Joe's bid comes through loud and clear. "Did I bid that?" he says under his breath, not quite remembering what the last change made his bid.

There are three more bids, all on the high side of Joe's. Joe is the winner. He glances down at his scratch sheet. "Now, if I hadn't made that last-minute cut, I would have saved myself ten thousand."

He shrugs his shoulders as he leaves the big hall. "Well, it's time to go to work."

You Name the Job . . .

No matter what it is, you have the answer with the new Homelite "300" Pumps. Three models are available . . . the quiet, slow speed model for economical, high capacity pumping jobs . . . the standard-speed, fast-priming model for jobs requiring higher discharge pressures . . . the high-volume pressure model for jetting, fire-fighting, irrigation and other jobs requiring high discharge pressures. Each model weighs only 103 pounds. Each pumps 300 gallons per minute . . . 18,000 G.P.H. Fast self-priming, up to 28 ft. above water level. And as an extra bonus, each of the new "300's" has a new ceramic-coated seal that greatly reduces maintenance costs.

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NEW AUTOMATIC IDLE CONTROL

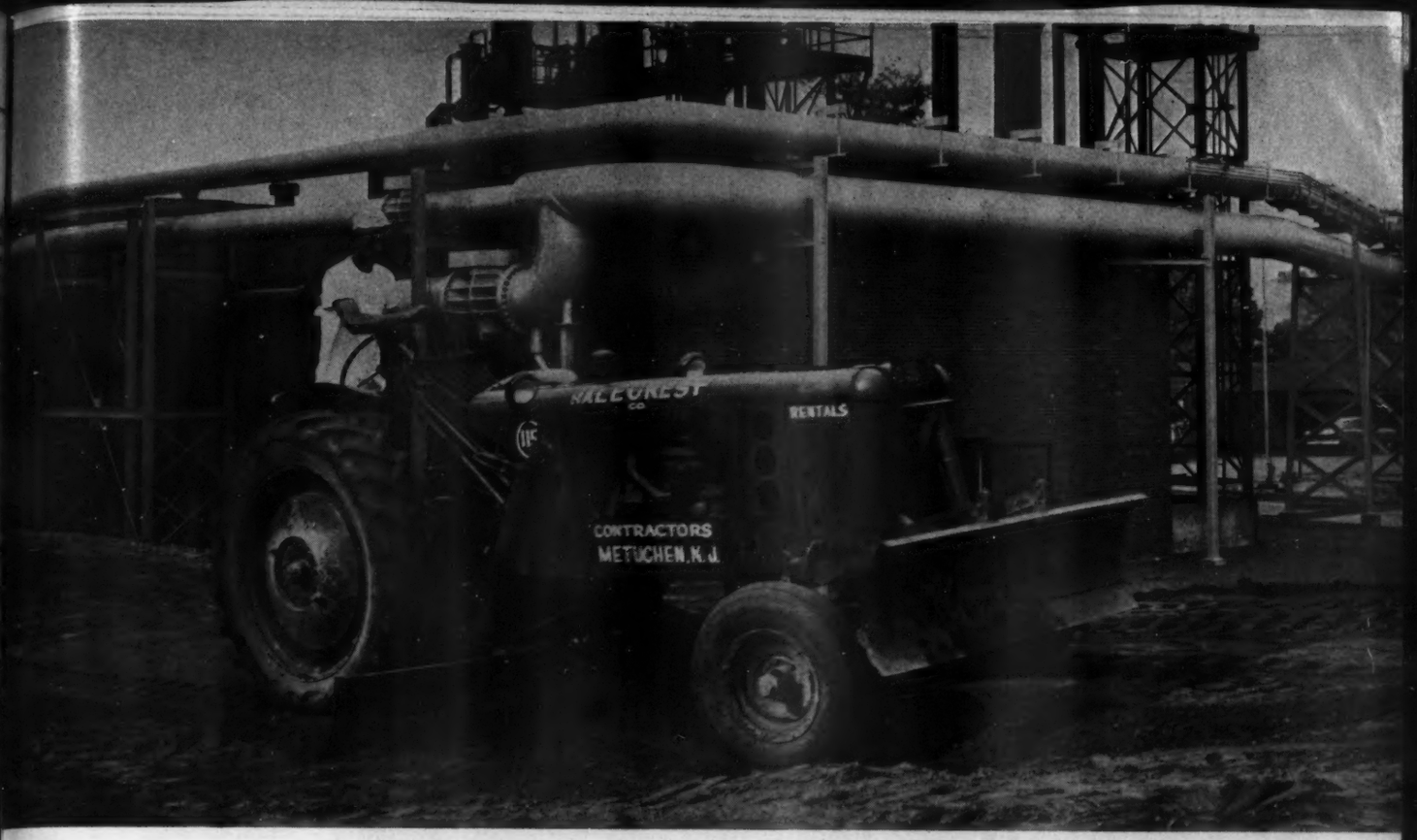
New Homelite idle control accessory automatically idles engine when water level drops below strainer . . . brings engine up to full pumping speed as water level rises. Because pump works only when needed, you save fuel, maintenance and labor costs. Ask for a demonstration.



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NEW JERSEY — Huber-Warco Maintainer owned by Halecrest Company of Metuchen, New Jersey, leveling fill at a large natural gas plant. Project included some new streets and landscaping on the plant grounds. The company also owns two Huber-Warco rollers.

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TORQUE CONVERTER combined with 45½ H.P. gasoline engine gives plenty of power for toughest jobs. Converter reduces shock loads, prolongs machine life, increases work capacity and cuts fuel consumption.

WORKING SPEEDS range from 1.7 to 8 M.P.H. Travel speed is 21 M.P.H. for quick movement between jobs. Weight is 6,250 lbs.—7,205 lbs. with calcium chloride in tires.

A complete line of optional equipment, in addition to the hydraulic attachments, is available for the Maintainer.

A trusted product name backed by respected distributor names from coast to coast



MOTOR GRADERS

Standard transmission models from 83 to 160 H.P. Torque converter and power shift transmission models from 102 to 195 H.P.



TANDEM ROLLERS

3-5 Ton • 4-6 Ton Retractable • 5-8 Ton • 8-10 Ton • 8-12 Ton • 10-14 Ton



3-WHEEL ROLLERS

10-Ton • 12-Ton • 14-Ton Standard Weight 10-12 Ton • 12-14 Ton Variable Weight



MAINTAINER

M-52 — 45½ H.P. Attachments are Lift-Loader, Broom, Bulldozer, Patch Roller, Scarifier, Snow Plow, Berm Leveler

HUBER-WARCO COMPANY Marion, Ohio, U.S.A.

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men

Buster Peterson— special-purpose engineer

Many machines designed and built by him to fit specific job conditions have gained widespread popularity

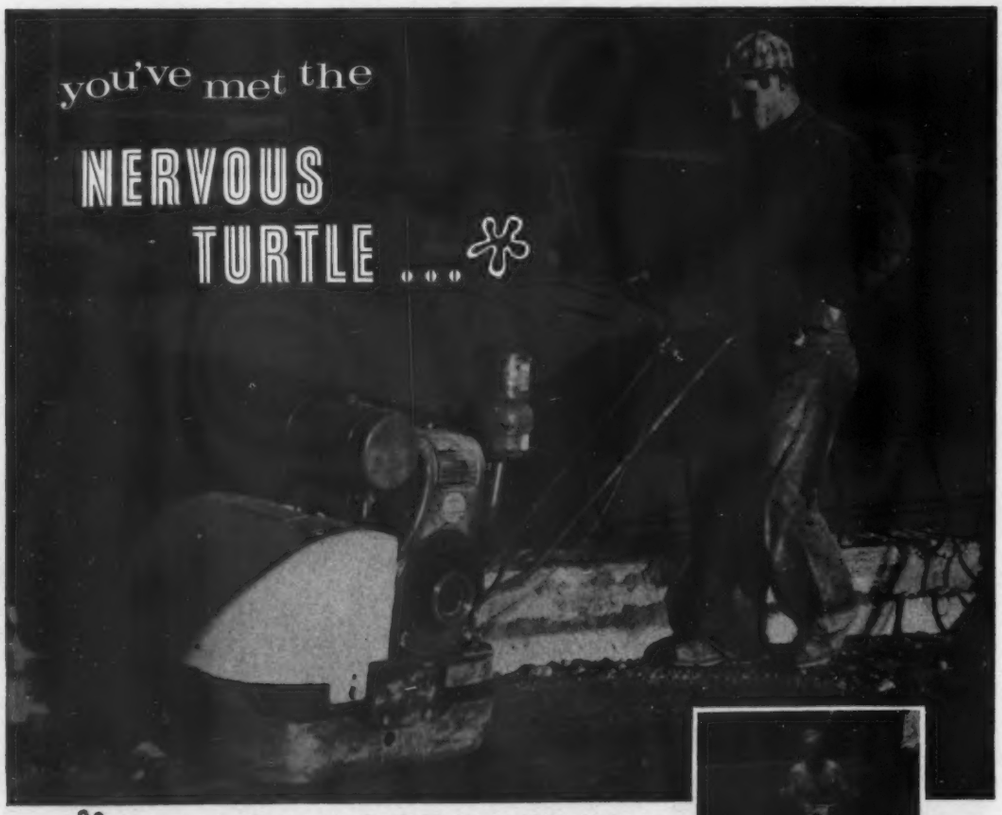


Buster Peterson, left, and his brother, Howard, operate the Peterson Tractor Co., San Leandro, Calif., a dealer that has made a name for itself in designing and construction modifications for existing equipment, and in building new equipment to fit tough working conditions. Buster, in charge of Special Purpose Engineering, sparked the modification work sought by many western contractors.

Western contractors know a man who will design and build special pieces of equipment to fit almost any of the many unusual job conditions they encounter. Many other contractors are using these machines without realizing who pioneered them. This man is R. A. "Buster" Peterson, executive vice president of Peterson Tractor Co., San Leandro, Calif., Caterpillar distributor.

When the standard factory machine does not fit the job conditions, Buster will come out on the job, study the conditions, and modify the equipment to fit them. His inventive genius may come up with an entirely new machine to suit a need.

As a result of these special-purpose studies, Peterson has pioneered a number of devices and methods that have been found widely applicable and have gained acceptance by both the construction industry and the equipment manufacturers. Some of these items are manufactured in the Peterson Tractor Co. shops in San Leandro. Others have been put into



*alias **TERRAPAC CM-20**

. . . only vibratory compactor that handles both clays and granular materials

Compaction at its best! You're sure of it every time when the "Nervous Turtle" does the work. This heavy-duty Terrapac CM-20 compactor simply jumps at chances to show its terrific ability on jobs other machines shy away from. Self-propelled for safe, easy one-man operation, the "Nervous Turtle" delivers a 6,600 lb. compaction wallop at a working speed up to 75 feet a minute. It handles all types of fill with ease and will penetrate up to 30 inches or more—depending on the material—in one or two passes. Ask your Vibro-Plus distributor to demonstrate a "Nervous Turtle" on your next job.

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"Nervous Turtle" shown above, is ideal for work close to foundation walls, abutments, over pipe, etc.

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Peterson is dwarfed beside the Cat-Peterson 482-P scraper, modified to provide capacities of 34 yards struck and 42 heaped. It is a favorite with western contractors and a staple in the Peterson lineup of modified equipment.



Peterson and Jack Salvador, who handles special modifications in the shop, make sure that the finished product looks as good as possible. They are examining a bracing member added to a Cat 482 scraper.

production by Caterpillar or other manufacturers.

Some special machines

A few examples include the U-doner; a bank-sloping dozer; the hydraulic tilt dozer; a tandem ripper for two D9 tractors; the combination of inside arm dozers, cushioned push blocks, and extra-large scraper that made double push-loading really pay; a clam bucket for the Traxcavator; and a host of others. Some of these are in such common use today that most users do not even realize they are relatively recent developments pioneered by Peterson.

Buster

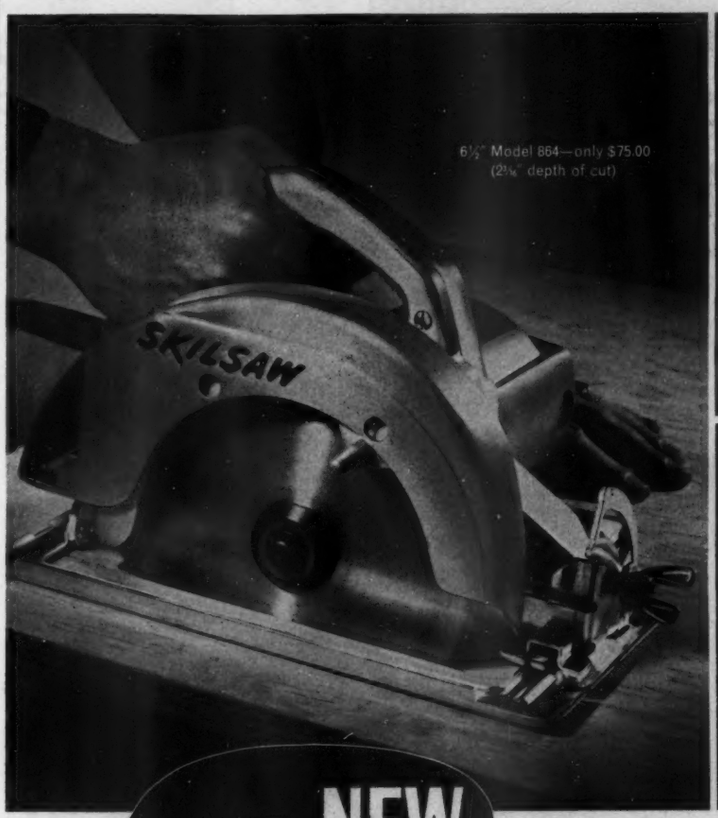
Robert Arnold Peterson—or "Buster" as he has been called since birth, when he weighed in at 13 pounds—was born in Stockton, Calif., in 1916 and spent his early years there.

Among his fondest recollections of boyhood were climbing over and playing on some of the very earliest

(*Continued on next page*)



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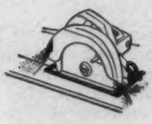
NEW 3 SKILSAW POWER SAWS

...combines famous SKIL quality with low cost!

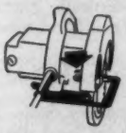
These new ball-bearing heavy-duty models are a perfect complement to the "Standard" of the industry—SKIL's Super-Duty Line. They're the ideal "extra" saws you need to cut down non-productive time and speed up construction. Best of all, prices are low enough to meet everyone's budget.

Just look at these exclusives... a new saw dust ejection system that directs dust away from the operator's face and line of cut. New "push button" blade lock for faster, easier blade changes... redesigned upper guard that permits full blade visibility... new easy-to-reach depth adjustment ...many others. And each has the famous SKIL "Vari-Torque" clutch for protection against kick-back and overloading of motor and bearings.

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EXCLUSIVE! New ejection system directs dust away from operator and line of cut.



EXCLUSIVE! New Push-button engages, locks saw shaft permitting fast, easy blade changes.



NEW! Blade visibility is greatly improved, gives extra accuracy needed on critical cuts.

SKIL ...another basic Skil construction tool

Famous SKIL and SKILSAW products made only by SKIL Corp., 5033 Elston Ave., Chicago 30, Ill. In Canada: 3601 Dundas St. West, Toronto 9, Ontario.

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An extra-heavy premium sheepsfoot roller was developed by Buster Peterson to eliminate troubles causing roller down time. Pairs hooked in tandem and fitted with steering cylinders operate backward and forward without turning around.

4500 sq. feet per hour . . .
That's TAMPING, brother!



. . . That's the kind of tamping that packs profit into paving jobs. These Stow tampers work faster, more efficiently compacting granular soil in trenching, backfill, sub-bases, foundations. Perfect for blacktopped surfaces and for preparing pavement patches, too.

Precision engineered for top performance, the Stow T-18A tamper coordinates the engine stroke with the vibrator stroke to deliver maximum impact (2200 lbs.) to the tamping surface; is designed to propel itself along at speeds *up to 50 feet per minute* . . . while it tamps more than 4500 sq. ft. per hour!

And talk about trouble-free . . .

The Stow Tamper is powered by a Wisconsin easy-start engine . . . equipped with special fuel pump to insure efficient engine performance in all operating positions. And here's a maintenance note: gas tank is mounted underneath the engine for maximum rigidity . . . less wear and tear!

Like we said . . . "That's tamping!"

Try this revolutionary Stow Tamper on your next job. Your local distributor will be glad to arrange an on-the-job demonstration!

Remember Stow T-18A Tamper compacts FASTER, MORE EFFICIENTLY, WITH LESS WEAR AND TEAR.

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(Continued from preceding page)

tractor-scrapers built and used by R. G. LeTourneau, then a local contractor at Stockton.

At the age of 15, he was operating one of these scrapers for LeTourneau. Then, when LeTourneau turned to manufacturing, Buster followed him, working as a serviceman. At 18, he made an extended trip to the Near East, Africa, and Europe, demonstrating and servicing the equipment. This was the first time that American scrapers and bulldozers had been introduced into foreign service, and he was the first international serviceman.

Joins equipment firm

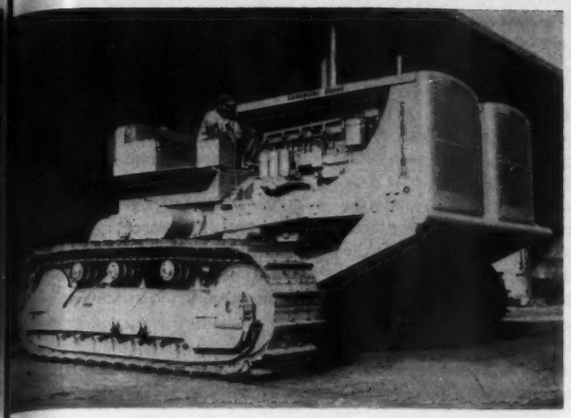
With the LeTourneau organization, Buster advanced to a position of design and development engineer, in plants throughout the country.

Then, in 1937, his brother Howard established the Peterson Tractor & Equipment Co. in Hayward, Calif., and secured the Caterpillar distributorship for the San Francisco Bay area. In 1943, Buster made the break and joined his brother as executive vice president of the firm that is now the Peterson Tractor Co.

Here, in charge of Special Purpose Engineering, he has found the shoe that really fits—the job of augmenting the factory in applying Caterpillar products to specific uses. The work is tailored to his inventive and creative abilities.

During the past 17 years, Buster has always operated in about the same way. When a customer has a special problem, he goes right out on the job and analyzes the problem. If special techniques are required, he gets together with Kenneth Park, the company's earthmoving consultant, to work out a method that will solve the problem.

If a modified or new piece of equipment is indicated, he takes the problem back to his Special Purpose Engineering Department and goes to work on the details of producing such a machine. When the ideas have crystallized and been put into the form of drawings, he calls in Jack Salvador, who handles the special-purpose equipment in the shop. Together they work out the details of actual fabri-



A double D8 tractor—the pioneer of the double tractors—crawls out of the shop. Buster goes into the field to find out job requirements; then fabrication details are worked out in the Special Purpose Engineering Department. From there, the shop takes over under Peterson's supervision.



When a contractor on the Delta-Mendota irrigation canal in the San Joaquin Valley needed a special blade for shaping the sides of the canal, Peterson came up with this attachment on the end of a dozer blade and with a hydraulic tilt cylinder on the blade. It was the prototype for today's hydraulic tilt dozer.

...ation. Salvador and the shop take over from there under Peterson's close supervision.

Some typical examples

There are many examples of equipment turned out by Buster to meet specific problems in the field.

Some years ago, a large pipeline contractor had taken the job of laying the first 32-inch gas pipeline from the San Francisco Bay area to Needles on the Arizona line. But pipe size had outrun the capacity of existing side-boom tractors, and the contractor was in trouble. He had planned to handle the heavy pipe with a larger number of D8 side-boom tractors, but found the coordination of the machines too cumbersome.

Peterson was called in to suggest how they could put on more counterweight or otherwise increase the lifting capacity of the tractors. More weight, he decided, was not the answer, because it badly overbalanced the tractor when there was no load

(Continued on next page)

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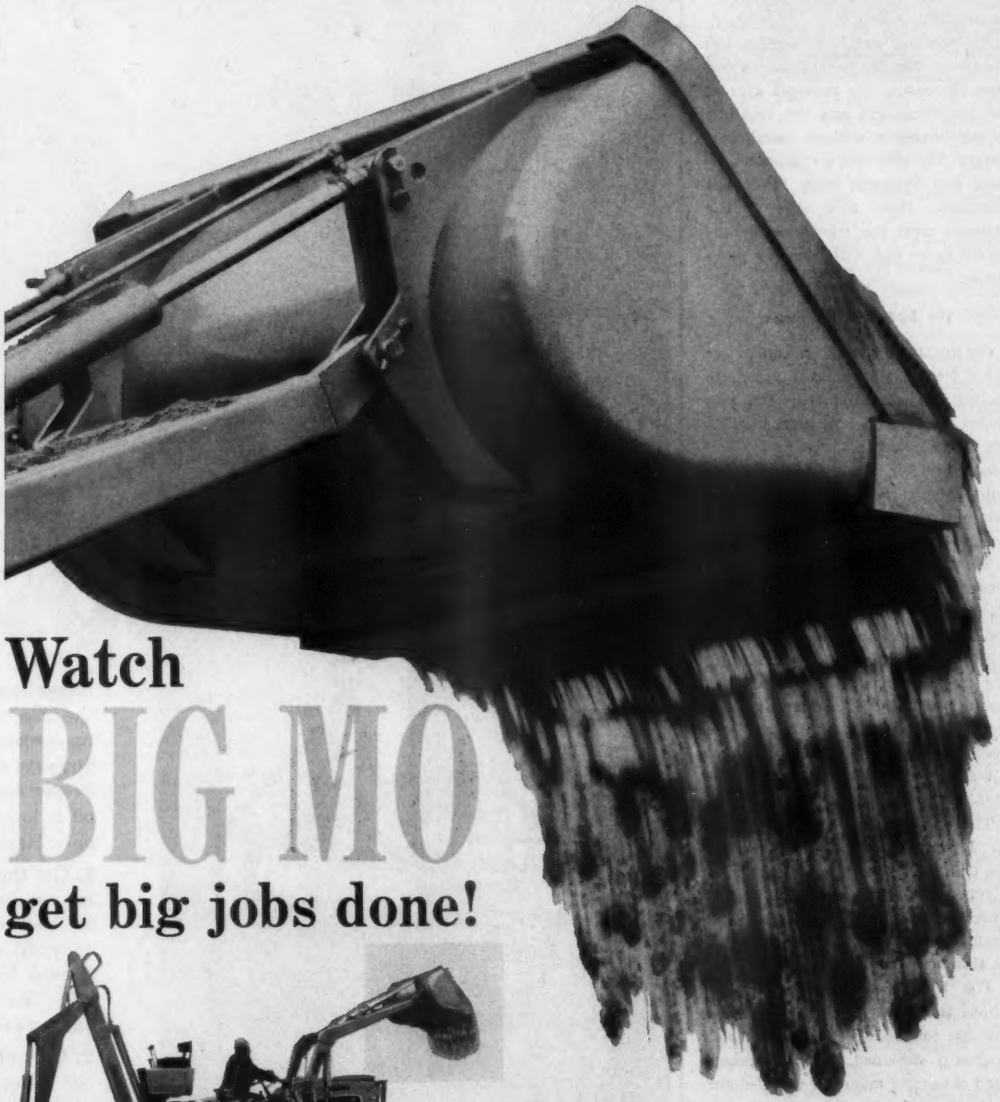
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And on Big MO's other end is the workin'est backhoe you ever saw. It digs in 12 ft. 6 in. at any point in a 190° swing. With *7000* pounds of digging force. Digs straight sides and square corners. And the offset seat pivots with the boom so the operator can see what Big MO is doing at all times.

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**Moline Dealers give the best Parts Service in the Industry.*

MINNEAPOLIS* MOLINE

The fastest-growing line of industrial equipment!

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Attaching rippers to the rear of big tractors, a big step forward in ripping, was advanced by Peterson with a ripper that could take the force applied by two D9's.

(*Continued from preceding page*)

on the lifting line.

His solution was to widen out the tractor on the side toward the trench, thus increasing the moment arm of the counterweight and the tractor's lifting capacity without additional weight. The idea was a complete success, and Peterson built 15 of the machines; these took care of the demand until the tractor manufacturers came out with heavier pipelayers.

The hydraulic tilt dozer

On another occasion, a contractor asked Peterson to build a dozer attachment that could trim the side slopes of a large irrigation canal—the Delta-Mendota Canal in the San Joaquin Valley. Buster designed and built a long, tapering dozer wing to attach to the end of a standard bulldozer blade.

This machine trimmed the bank nicely when the tractor could operate on a smooth bottom. On a rough bed, the tilting of the tractor left the slope very irregular. To be practical, the machine needed a device that would enable the operator to tilt the dozer blade quickly. Buster saw the need and replaced the conventional tilt screw of the blade with a hydraulic cylinder.

This soon became the most popular dozer on the job. When it was not trimming sides, the workmen used it for other dozing jobs, finding the hydraulic tilt extremely handy. A similar tilting device is now available as standard factory equipment.

The U-dozer is another case in which the most popular use is not the one for which the machine was originally designed. Peterson developed a narrow model of the U-dozer as a pioneering machine. It was intended as a cross between the angle-dozer and a bulldozer. Operators soon found that they could carry more material with the U-dozer, and it has become a very popular rig in gravel pits and for other bulk-material movements.

The development of the Peterson double push-loading technique combined some special equipment and a method for using it. About the time the D9 came on the market, many contractors were experimenting with double push-loading, but the results were not always satisfactory or economical. Peterson's answer was a complete package, including several modified machines.

First, the D9 tractors were fitted with special inside arm dozers with narrow blades that left nothing projecting outside of the tracks. Special cushioned push blocks—heavy rubber pads were used—were fitted to the rear of the tractors to absorb and transmit the load of the second tractor. Then the standard Cat 456 scraper was enlarged to a capacity of 26 yards struck or 33 yards heaped.

The result was a combination that loaded huge volumes of almost any kind of material at economical prices and without undue shock or strain on the equipment. The team found quick acceptance among western contractors, who have always been looking for bigger machines to do the big jobs faster and more easily.

The Peterson shops now modify the new Cat 482 scraper to increase its capacity to 34 yards struck and 42 yards heaped. The remodeled machine is marketed as a 482-P model.

Big rippers

Ripping took a gigantic stride forward when the heavy ripping attach-





Drilling for oil—USS Tiger Brand Rotary Drilling Lines on one of the ... deepest wells—combine strength, toughness and long service life.



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Regardless of the type of equipment you operate ... the size, grade or construction of the wire rope ... use—when you get better service from that wire ... you save money.

Proper selection and care of your wire rope will ... off in longer rope life and consequent operating ... omy. Here are 10 ways to increase the life of wire ...

1. Get the right rope. Carefully examine the ope... ing requirements for your rope, determine how ... the loads will be, how much abrasive wear, distort... or crushing the rope must withstand, and how flex... it must be. Then choose the USS Tiger Brand ... Rope that has the properties you need . . . the... one for every type of job.

2. Unreeling. To prevent kinking, be sure the re... coil is free to rotate as the rope unwinds. Mount ... on an unreeling stand or on a shaft supported by ... jacks. Otherwise, hold the rope end and roll the ... along the ground to unwind the rope. Always use ... latter method for coils.

3. Sheaves and drums. Align all sheaves. Be ... that sheaves and drums are free to rotate and ... enough in diameter to prevent sharp bending. Gro... must be slightly larger than the rope diameter a... scored or badly worn, should be reground before ... ropes are installed. Sheaves with broken flanges sh... be replaced immediately.

Strip mining—USS Tiger Brand Hoist Rope for strength with flexibility, ... Brand Drag Lines for strength with abrasion resistance, and Tiger ... Boom Supports for high resistance to vibration fatigue.

ments were provided for big tractors like the D9. Peterson immediately saw the possibilities of two D9 tractors applying their weight and power to a single ripper. The result was the Peterson tandem ripper. This extremely heavy ripper attachment for the D9 has a shelf to receive the dozer blade of the second D9, which pushes from behind. If the second machine has hydraulic dozer controls, it can add its down pressure to that of the first tractor. This rig greatly increases ripping possibilities. In fact, Peterson publishes a bulletin entitled "Ripping—Beyond Ripping," which advocates the use of the ripper in many types of rock.

In response to another contractor's request, Peterson developed and is now producing an extra-heavy sheepsfoot roller designed to minimize maintenance. When pairs of these rollers are used in tandem, they can be fitted with hydraulic steering cylinders that enable the towing tractor to go back and forth without turning around at the end of each pass. These rollers are currently in use on Trinity Dam in northern California and on Navajo Dam in New Mexico.

At the request of the U. S. Army, Peterson developed a special modification of the D2 and D8 tractors for use in the snow in Arctic or Antarctic regions. The D8 model has tracks 13 feet long with shoes 54 inches wide to minimize ground pressure. This machine was fitted with a hydraulically controlled swinging drawbar as an aid to steering when pulling a train of heavy sleds.

The many special machines turned out by Peterson's Special Purpose Engineering Department were all developed under similar circumstances. Some of the others are:

A D4 tractor mounting an Intelli-Giant hydraulic monitor for use on a rock-fill dam. The tractor operator controls the monitor, and a rear winch and boom handle the heavy hose line.

An old D2 fitted with a big fan for producing a draft to help burn logs and stumps for a clearing contractor.

A twin D8 tractor that filled the need for a bigger tractor before the D9 was introduced.



A water tanker—without harsh lines or an ugly shape—shows Peterson's faculty for designing equipment that is functional and good looking.

Dozers for the DW20 and other rubber-tire tractors.

Low-ground-pressure tractors for handling chips at paper mills.

One of the most recent developments is a clam bucket for the Traxcavator. The pilot models of this attachment showed amazing versatility in demolition and clearing work, as well as in handling stumps, trees, and other large objects.

With the introduction of the new line of Cat rubber-tire Traxcavators, Buster is looking forward to a lot of new adaptations that will modify these machines for special jobs.

Eye for strength and beauty

His associates have noticed that Buster has an uncanny eye for detecting weak spots and a remarkable ability to design with adequate strength. He has been known to watch a machine at work and detect its weakest points simply by observation. It was thus possible to stop the machine and strengthen these weak spots before failure occurred.

In all his designing and remodeling, he has a very fine eye for appearance. His creations have smooth lines that are pleasant to look at, as well as being functional. The remodeled machines look as good as the new factory models. In fact, most observers would never know that the machines had been cut apart and welded back together.

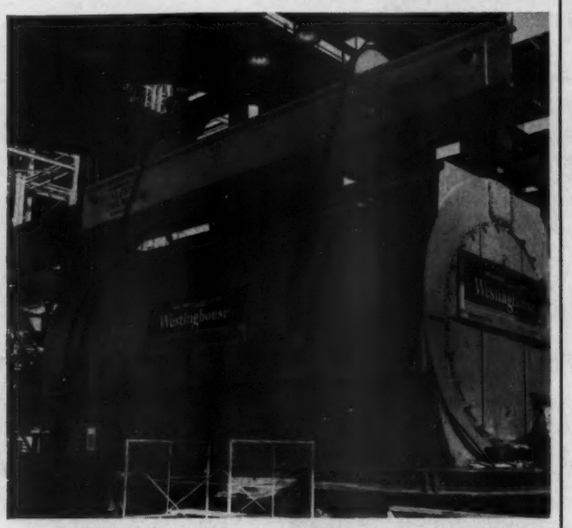
Buster Peterson is best known among western contractors as the man who can apply their Cat machines to specific job problems, but his many ideas and devices have had a tremendous influence on the construction industry throughout the country. THE END

The New Jersey Turnpike had toll revenues totaling $34,278,345 for the year ending April 30, 1960, an increase over the same period last year when a total of $31,293,483 was collected in tolls.



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...ure the re... ...s. Mount ... ...ported by ... ...d roll the ... ...lways use ...

...aves. Be ... ...ate and ... ...ding. Gro... ...ameter a... ...d before ... ...flanges a...

...with flexibility, ..., and Tiger ...

Wire rope fittings. Install sockets, clips, swaged ...gs or spliced loops or thimbles depending upon ...e requirements. Tiger Wire Rope Sockets, prop... ...attached with molten zinc, develop the full strength ...e wire rope.

Seizings. To prevent untwisting, apply seizings to ...nds of any non-preformed wire rope that is not ...hed to permanent fittings. When you cut a non... ...med wire rope, apply seizings on both sides of ...ut to prevent distortion.

Lubrication. Lubricate your ropes regularly with ...r Lube Wire Rope Lubricant to cut down internal ... and reduce corrosion.

Cutting back. It is often advisable to change the ...ion of a rope on sheaves and drums by cutting ...t lengths of rope from the drum end. This distri... ...e wear more evenly, prevents fatigue from con... ...rating at any one section of the rope, and increases ... life. If you plan to cut back, order your ropes a ... longer than normally required.

Reverse ends. Reversing a rope, end for end, will ...ase its life if half of it gets most of the wear. ...ersing distributes wear and fatigue evenly through... ...the rope.

Storing wire ropes. If you take a rope out of ...ice for any length of time, clean and lubricate it thoroughly. Then store it in a dry place, protected from the weather.

10. When in doubt. If you need help in selecting the right rope or in setting up good maintenance procedures, call in a Tiger Brand Wire Rope Engineer. He can give you expert advice on any wire rope problem. Just call our nearest distributor or send the coupon.

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Before and after inspection visits to his jobs, Tompkins project manager John Muncks (right) catches up on desk work. Here he goes over shop drawings for a remodeling job with office engineer Paul Altman.

The project manager

Man of many duties

Over-all construction boss, building superintendent, safety engineer, estimator, tenant contact man—these are titles any one of which might describe John D. Muncks.

Taken collectively, they do a pretty good job of describing a typical workday in the life of this Washington, D. C., project manager.

Muncks is one of three project managers with Charles H. Tompkins Co., building and heavy concrete contractor with headquarters in Washington. Projects under his supervision these days include several building jobs in the city of Washington, hence the titles above.

When CONTRACTORS AND ENGINEERS visited Muncks a couple of months ago, he was finishing up a 9-story reinforced-concrete office building, in the midst of a 5-story addition to a newspaper plant, and checking plans for a remodeling job in an existing building. Each project, of course, had its own demands peculiar to its stage of development, but the day we spent with him, Muncks made a detailed inspection of the buildings and any work in progress; consulted with owners, tenants, decorators, and his subcontractors, not to mention the job superintendents and foremen; and spent several hours on paper work back at the office.

The visits to the job sites, where Muncks makes a floor-by-floor inspection with the job superintendent, are a once and sometimes twice-daily routine for this busy project manager. Only that way does he feel he can keep in constant touch with the progress of the job. There's no substitute for first-hand knowledge, he feels.

Perhaps the best way to get the picture of John Muncks' day is to follow him around, as we did one day, and watch him in operation.

Promptly at 8:45 a. m., after a drive of about four miles from his



This 9-story reinforced-concrete office building in downtown Washington was built by Charles H. Tompkins Co. for the National Coal Association. Virtually completed when this picture was taken, the $1 million job was supervised by Muncks.

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Project manager Muncks makes a telephone check with his office as he discusses some wiring changes with James Reese (center), superintendent on the National Coal Association building, and Jim Noonan, electrical superintendent. Reese is a 38-year veteran with the Tompkins company.



On their floor-by-floor inspection of the Coal Association building, Muncks and superintendent Reese check with an incoming tenant to make sure that everything is satisfactory. Some tenants were moving in even while finishing work on their floors was still in progress.

home in nearby Arlington, Va., John arrives at the Tompkins company offices in downtown Washington. He makes a phone call or two, sees one or two people in the office on some matters coming up that day, and within 15 minutes has his coat and hat on again for a visit to his first project.

The National Coal Association building is a 9-story reinforced-concrete office building in downtown Washington, just a few blocks from the Tompkins offices. Tompkins, as general contractor, had a $1 million contract for the building, which was completed and turned over to the owner late in March. When we visited Muncks, the building was virtually completed, and a few tenants were already moving in.

On arrival at the building, Muncks goes immediately to the basement and sees James Reese, superintendent on the job. Reese is a real veteran with the Tompkins company, having been employed there in various ca-

(Continued on next page)

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On this project, the West Delaware Tunnel Constructors also drove a record 2,177 linear feet in a single 31-day period and established a shaft-sinking record of 243 linear feet for a like period.

Hercules® Short-Period Delay Electric Blasting Caps, used almost exclusively in all phases of blasting activity on the West Delaware Tunnel, proved their dependability and efficiency in helping to establish these records.

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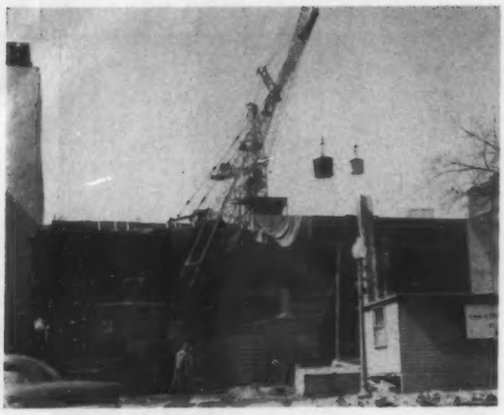
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◄ Another of John Muncks' projects. This is a $3,700,000, 5-story reinforced-concrete addition to the Washington Post-Times Herald plant in downtown Washington. A P&H truck crane, foreground, and a Universal-Liebherr 40-T slewing crane handle concrete.



His inspection tour of the Post-Times Herald job takes Muncks to a concrete placement operation for the third floor, where he and the superintendent watch scaffolding being erected and formwork placed. Muncks' quick eye takes in every detail of the scene.

(Continued from preceding page)

pacities since 1922.

Since the building is now enclosed, the construction "shack" is in the basement, and it is here that Muncks and Reese discuss any new developments or problems. The two of them then consult with the electrical superintendent about installing more outlets on one of the finished floors. This calls for some close huddling over architectural drawings.

That problem solved, Muncks and Reese take the elevator to the top floor, sharing the car with some building materials or flooring material on its way to the upper floors. Once at the top, they begin the daily inspection of the building.

Here it is fascinating to watch John Muncks in action. He has no notes, nor does he appear to need to consult any. His trained eye knows exactly what to watch for, and he knows at just what stage each floor should be. He doesn't miss a trick, either; if a tenant wants to move some office furniture in later that day, he remembers it and advises Reese to have the floor cleaned up by 2 o'clock.

The project manager is full of questions: "What about the windows on 6? Is 8 washed and waxed? These walls are a little scratched; how soon can we get a finisher up here to fix them? Did they replace that damaged marble in the lobby?"

Inspects each floor

Walking down from floor to floor, Muncks strides quickly around each floor, peering into rooms, inspecting washrooms, closets, etc., checking on things he had found the day before that needed attending to. Reese fills him in on what's being done and, occasionally, why not. Laborers are taken off one job and put on another if there seems a greater need.

On this particular job it seems there's a problem with some of the windows leaking; during a heavy rainstorm a few nights ago a little water seeped in around the frames. Muncks orders a "water test" on the windows and asks Reese to let him know the results as soon as possible.

On one of the floors, an impatient tenant is already moving in furniture, and Muncks stops to chat with him a minute and make sure everything is in order. Electrical workers are finishing up the wiring, and

What other culvert material has all



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MEETS AASHO SPECS. Beth-Cu-Loy culvert sheets in every way to AASHO standards. Bethlehem furn sheet manufacturer's certified analysis and guarantee includes the average chemical composition by ladle







EASY TO INSTALL. Light enough to be laid without equipment. Long pipe lengths reduce the number joints, speed up laying.

FIELD JOINTS IN MINUTES. No sealing compound needed, no mortar to set. Just a connecting band of Beth-Cu-Loy secured around the joint with a few turns of a wrench on the bolts ... it's no more complicated than that.

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Hesselgesser (left), superintendent on the Post-Times Herald project, with project manager Muncks in the project office. Hesselgesser another Tompkins veteran; he has been with the company for 20 years.

plumbers are making a final check of the washroom installations. Muncks stops and has a word with all of these, determining how soon the floor will be completely outfitted for the tenant's use.

Having stopped at every floor on the way down, Muncks and Reese finally arrive in the building lobby. Here Muncks immediately checks to see how workers are coming with repair or replacement of some broken marble facing. Decorators are already painting the lobby, and he has a word with them about their work.

Back in the basement, Muncks calls in to the office, checks to see if there are any phone calls, discusses a few more points with Reese and reminds him of one or two pressing matters, and then leaves for his second project.

This is a 5-story reinforced-concrete and structural-steel addition to the Washington Post-Times Herald building, also in downtown Washington. The $4 million project is being done in three stages, and the additional 150,000 square feet of space will eventually house presses and office space. It is scheduled for completion around the end of this year.

Here Muncks checks in with Guy Hesselgesser, superintendent on the job. Guy is another Tompkins veteran; he has been with the company 25 years.

Work in progress on this job includes concrete placement on the third and fourth floors of the second stage, so Muncks and Guy make their way up to the pour, after a brief consultation in the shack. This consultation has included some discussion with the architect's representative about just when some forms should be stripped.

On this job things are a little behind schedule because of the steel strike and some severe winter weather, and Muncks is being pressured by the owners to move things along. There is no time saved in taking any risks, however, so it becomes a matter of deciding where things can be hurried and where they can't.

A project manager runs into all sorts of little problems, since he is the contractor's highest representative on the job. Some of these can be touchy ones, particularly where dealing with the public is concerned.

A case of public relations

For example, on this job it was necessary to position a mobile crane handling concrete buckets in the driveway of an adjoining embassy. The fact that the embassy is that of an iron-curtain country makes the

(Continued on next page)

...antages of corrugated Beth-Cu-Loy sheets?

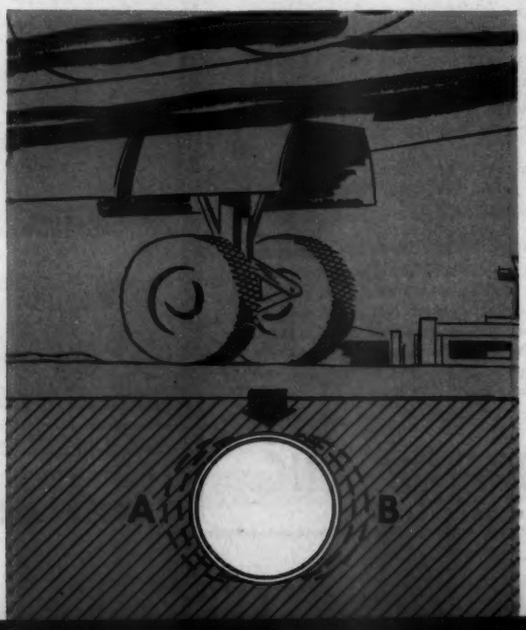


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Campbell Cab for "Caterpillar" Tractor

D7-210 for D7 17A series tractor and D7-224 for D7 3T series tractor

WINDOWS—safety glass windows throughout. Sliding windshield glass.

CONSTRUCTION—all steel.

COLOR—painted yellow to match color of tractor.

DOORS—two heavy-duty sliding doors provide easy entrance and exit for the operator. Doors can be latched in an open or closed position.

MEASUREMENTS—

D7-210	D7-224
length 56"	length 54"
width 65"	width 65"
height 58"	height 58"

OPTIONAL EQUIPMENT—windshield wiper, sun visor, locking handles, heater-defroster unit.



Campbell Detachable Cab Co. • Wauconda, Illinois

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(Continued from preceding page)

incident a more touchy one.

The embassy officials have been pretty good about the whole thing, but the fact that they can't use their garage for a period of several weeks has been something of an inconvenience. Every once in a while they request that the crane be moved as soon as possible, and it is Muncks' job to keep them happy while the crane finishes its job.

This project manager's eye doesn't miss a trick on the job. Walking around the site of the newspaper plant addition, he stops to move some reinforcing steel which had dropped from a truck in a driveway. Fully aware of all the thousands of details that go to make up smooth, efficient operation, he is quick to note something amiss that would interfere with this efficiency.

After his thorough inspection of this job, Muncks goes back to the shack for more consultation with Guy. Perhaps there are some shipments of materials to check on, or the next concrete-placement schedule to discuss. A subcontractor's representative may stop in to go over a point with the project manager.

His business finished at the newspaper plant, Muncks walks a few blocks to the National Geographic Building, a brick, stone, and marble building housing the headquarters of the world-famed explorers' society. Tompkins has a contract to replace two old elevators with modern ones, and the job will entail such work as tearing out part of a marble wall and pouring a concrete slab at the top floor to support the machinery for the new elevators.

Muncks goes to the top floor to get an idea of the working space available, and to determine how the concrete will be brought up to the pour. He takes some quick measurements of the wall area that is to be removed. Here he makes some notes, for he will have to convey this information to the engineers back in the office.

Somewhere along the line, between visits to projects, there has been time for a quick lunch, and now Muncks heads back to the office for the desk work that is a part of every project manager's day. He may have to make another trip to one of the project sites later in the day, but there is a certain amount of paper work that can be done only in the office.

Back at his desk, Muncks calls in one of the office engineers to give him the data on the National Geographic Building. Shop drawings have to be made up and materials ordered in preparation for tackling the job.

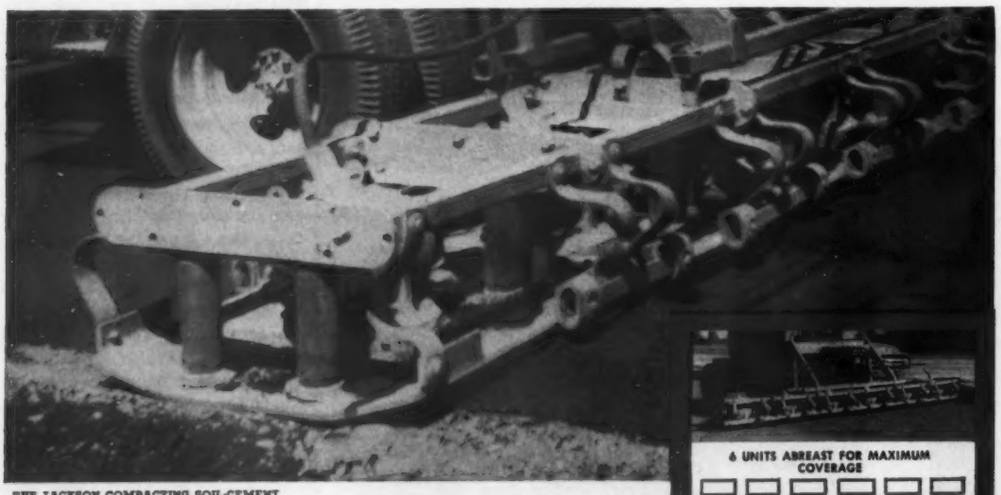
Another office engineer may be coordinating shop drawings for one of the other projects, or working up estimates for changes on the job. Someone else has prepared a requisition for subcontractor payment, and Muncks has to okay this before it is paid.

And always the telephone

There are always interruptions. A call from the newspaper-plant project with a question from the superintendent. Another call from the owners of the new office building: Can a tenant move into the sixth floor the day after tomorrow? This necessitates a call to Jim Reese, the superintendent on the job, to check progress on that floor, and then another call back to the owner.

Sometime during the afternoon, Muncks may have a session with his immediate superior, J. Slater Davidson, Jr., vice president in charge of local construction for the Tompkins firm. The two will go over general progress of the jobs under Muncks' supervision.

Davidson supervises the work of two other project managers besides Muncks, men who are in charge of



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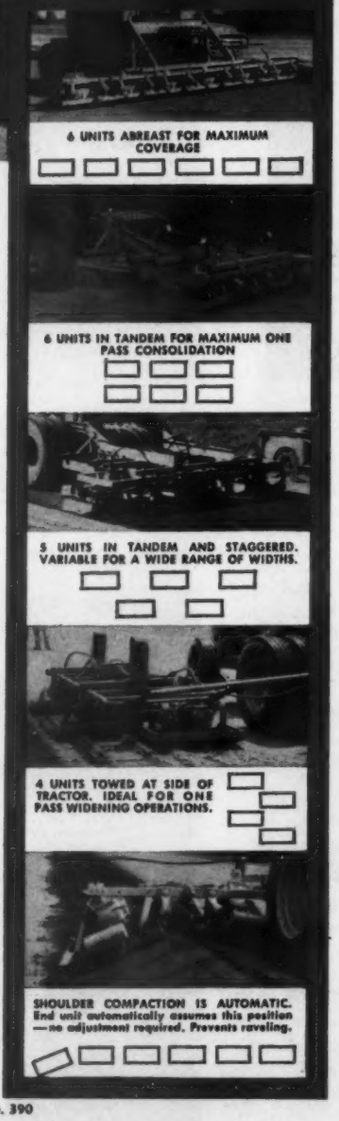
. . . a record that has been duplicated time and again. And the JACKSON is equally effective compacting any granular soil from sand to large rock in macadam base courses, infiltrating fines and compacting fills. With each vibratory unit delivering 4200 3-TON VIBRATORY BLOWS PER MINUTE required density is reached with unmatched rapidity. Tandem hook-ups, such as shown at the right, further decrease production time on narrow jobs. Coverage can be just what you want. Even individual units can be detached and operated like standard single compactors. And both the JACKSON MULTIPLE and the JACKSON TRAILER COMPACTOR operate in either direction . . . NO DEADHEADING OR TURNING REQUIRED.

The ball-bearing-mounted motors which actuate the compacting units operate far more efficiently than any belt or chain driven system and hence the fuel consumption of JACKSON COMPACTORS is much less than any other vibratory compactor of this type . . . troublesome parts are eliminated and daily maintenance consists only of oiling the motors.

It will pay you handsomely to get the complete facts concerning these machines before tackling any major project. See your JACKSON DISTRIBUTOR who has them for sale or rent.



JACKSON TRAILER COMPACTOR . . . may be pushed or pulled by any prime mover capable of working speeds as low as 50 FPM; towed to location at any road speed; operated in either direction; controlled by prime mover operator. Power plant supplies both single and 3-phase 110-115 volt, 60 cycle A.C. and has many uses.



JACKSON VIBRATORS, INC.

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such other jobs as alterations to the Capitol Building; projects at American University, George Washington University, and Providence Hospital; and a joint-venture contract for construction of a new Central Intelligence Agency building in nearby Langley, Va. The company is also in joint-venture contracts for several dams, locks, and tunnels in other parts of the country and abroad. The firm is involved in an average of about $100 million worth of work a year, usually taking part in joint ventures for the big engineering jobs.

Like the superintendents, Tompkins' project managers have a long record of service with the company. Muncks himself, still a comparatively young man, has been with the firm 13 years, starting out as an estimator after engineering school and a stretch with the U. S. Army Corps of Engineers. He worked up through surveyor, office engineer, and superintendent to his present post as project manager.

Because it has good men supervising its jobs, Tompkins leaves its project managers pretty much alone. If the others have the good eye, keen memory, indefatigable energy, and sense of responsibility that John Muncks shows, the company needn't worry. They've placed the responsibility in capable hands. THE END

Bucyrus-Erie appoints eastern sales manager

J. V. S. Norton has been appointed sales manager of the eastern region of Bucyrus-Erie Co., South Milwaukee, Wis. Formerly assistant sales manager of the area, he succeeds F. Leslie Jones, who has retired.

Norton has been with the company, makers of drills and crane-excavators, since 1945. He will continue to work out of the New York office.



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Case history: Pulling piling at a dam site is made easier with the use of these Heppenstall semiautomatic tongs, suspended from a pile extractor. Lowered over the center web of a pile, the tongs grip the pile firmly while pulling it from the riverbed. Yet when the pile is safely extracted, a slight pull on the tag line shown at right is sufficient to latch the jaws open, releasing the load. The tongs are shown in use at the New Cumberland Dam, being built in the Ohio River by the Dravo Corp., of Pittsburgh, Pa. For further information write to the **Heppenstall Co.**, Materials Handling Division, Dept. C&E, Fifth Ave. and 16th St., New Brighton, Pa., or use the Request Card at page 18. Circle No. 130.

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front mount telescopic (single or twin)


twin telescopic underbody


twin piston underbody


frameless telescopic

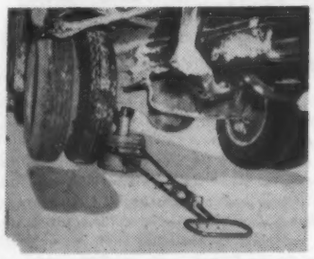
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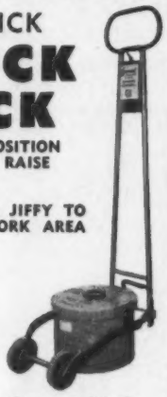


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Avoid legal pitfalls

Road was left in dangerous condition

THE PROBLEM: *When a state highway was being rerouted and reconstructed, the defendant contractors built a road connecting the old and new highways. The old highway was rerouted at an intersection with the connecting road, but it extended only 70 or 80 feet beyond the turn and ended in a ditch. There was no warning sign indicating that the highway did not extend beyond the intersection. A motorist was injured when, driving at night, he allegedly did not discover the turn until too late to avoid the ditch.*

The contractors had completed the work, and it had been accepted seven months before the accident. Were the contractors exonerated from liability on a theory that they were justified in assuming the state highway department would not allow the highway to remain in that dangerous condition without proper barricade or warning?

THE ANSWER: Yes. (Greenwood v. Lyles & Buckner, Inc., 329 Pac. 2d 1063, decided by the Oklahoma Supreme Court.)

The court recognized that contractors have often been held liable on a theory of willful negligence in leaving construction work in a dangerous condition. In this case, the contractors might have been liable for such an accident before the state had time to erect proper signs or barriers. But they were not bound to foresee inaction on the part of the state for seven months.

Haulage contractor was a subcontractor

THE PROBLEM: *The owner of loader trucks furnished trucks and drivers to haul dirt to a highway construction site in California under agreement with the prime contractor to comply with engineering plans and drawings. The truck owner was not licensed as a "contractor." Did that preclude him from collecting payment for the haulage?*

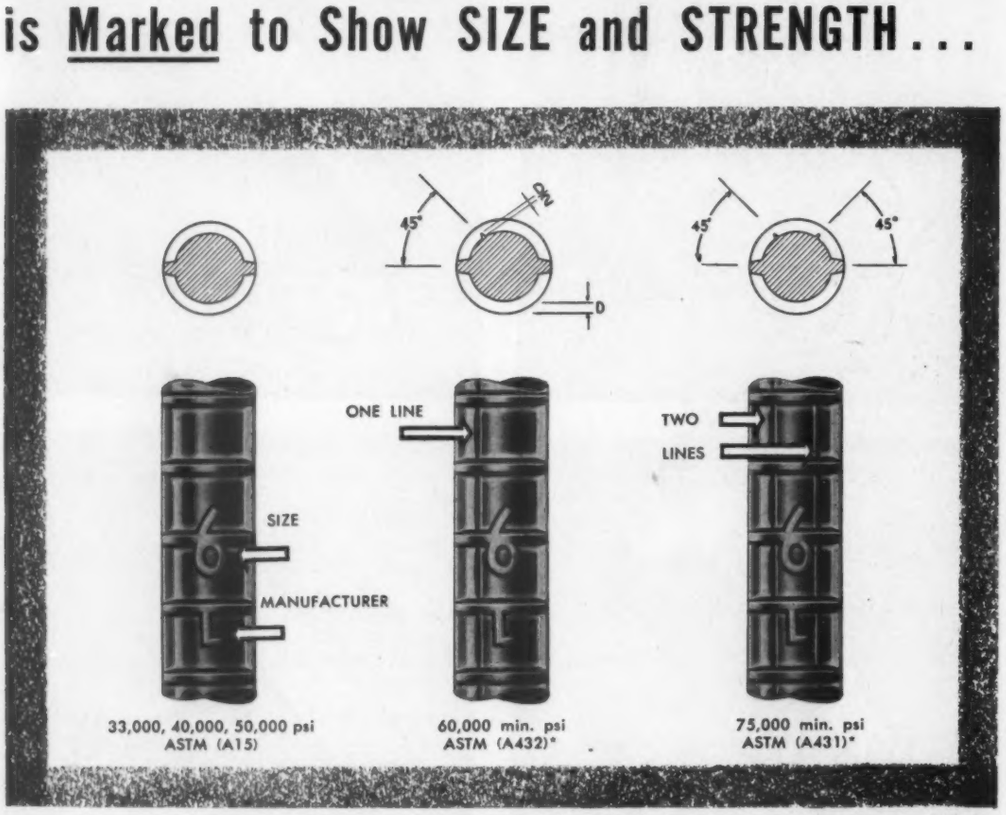
THE ANSWER: Yes. (Leonard v. Hermreck, 335 Pac. 2d 515, decided by the California District Court of Appeal, Fourth District.)

The decision interprets two statutes to this effect: Section 7031 of Business and Professions Code provides: "No person engaged in the business or acting in the capacity of a contractor may bring or maintain any action in any court of this state for the collection of compensation for the performance of any act or contract for which a license is required by this chapter without alleging and providing that he was a duly licensed contractor at all times during the performance of such act or contract."

The term "contractor" is defined in Business and Professions Code, Section 7026, as "any person, who undertakes to or offers to undertake to or purports to have the capacity to undertake to or submits a bid to, or does himself or by or through others, construct, alter, repair, add to, subtract from, improve, move, wreck, or demolish any building, highway, road, railroad, excavation or other structure, project, development or improvement, or to do any part thereof, including the erection of scaffolding or other structures or works in connection therewith. The

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...NGINEERS

term contractor includes subcontractor and specialty contractor."

The controlling clause of the contract read: "The subcontractor agrees to complete the above work in a workmanlike manner ready for use and in good operating conditions, in accordance with the general conditions, special provisions, specifications and drawings for the aforesaid project, all as prepared by the owner, and for which project public bids were received by the owner . . .; it is further agreed that the aforesaid general conditions, special provisions, specifications, and drawings now become a part of this subcontract with which the subcontractor agrees to comply."

The court concluded: "Clearly, by agreeing to comply with the engineering plans and drawings for the construction of the freeway, plaintiff became more than a mere conveyor of dirt."

Child drowns in ditch; contractor held liable

THE PROBLEM: *In clearing land, a construction company excavated a ditch 80 feet long, 12 feet wide, and 6 feet deep, under circumstances that indicated the probability it would fill with surface water. Tree stumps were pushed into most of the ditch and covered. When work was suspended for several days, a section of the ditch 15 or 20 feet long was left open, and it later filled with water. Children living nearby had commonly played on the land, and a 5-year-old skipped into the ditch and was drowned. In a suit for damages against the construction company, did the trial judge err in setting aside a jury's verdict in favor of the child's administrator?*

THE ANSWER: Yes. (Menneti v. Evans Construction Co., 259 Fed. 2d 307, decided by the United States Court of Appeals, Third Circuit.)

In setting aside a decision by the United States District Court, Eastern District of Pennsylvania, the Court of Appeals said the evidence justified a finding that the company had negligently maintained a dangerous condition, although the ditch did not fill with water until shortly before the accident.

Edited by A. L. H. STREET
Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

Allowance for moving off condemned land

THE PROBLEM: *A heavy-construction company in Florida owned a block of ground that was used to store equipment and for kindred purposes. The state condemned so much of the block for an expressway as to render the remaining ground insufficient for the company's use. The entire plant was moved to a new site about three miles away. A jury awarded the company $110,000 as full compensation, specifying that $6,000 of the sum was allowed as the reasonable cost of moving the company's plant to the new location. Was the $6,000 allowance permissible under the constitution and statutes of Florida?*

THE ANSWER: Yes. (Jacksonville Expressway Authority v. Henry G. Du Pree Co., 108 So. 2d 289, decided by the Florida Supreme Court.)

The decision involved an interpretation of a provision in the Florida constitution, prohibiting the condemnation of private property without payment of full compensation. The court noted that the United States Supreme Court and some state courts have decided that ordinarily the owner of land condemned for public use is not entitled to reimbursement for the cost of moving his personal property to a new location. It had been argued in support of this view that the owner's necessity for incurring removal costs does not enhance the market value of the property. The Florida court points out

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that there should be a different basis for valuing land where the seller has an opportunity to increase the price at which he will voluntarily sell so as to include the cost of removing his fixtures. But in condemnation proceedings, the owner is seldom a willing seller at the amount awarded him.

One of the concurring justices of the court mentioned that the cost of removing personal property sometimes will greatly exceed the value of the land. He also noted that land upon which heavy building materials are stored is usually in remote and undesirable areas where land values are extremely low.

Engineering charges

THE PROBLEM: *Engineers sued a city to collect for supervisory services rendered on a large municipal water-supply project. Did they establish a right to collect, excepting for certain services as to which they had waived their claim?*

THE ANSWER: Yes. (City of Houston, defendant-appellant v. Howe & Wise, plaintiffs-appellees, 323 S.W. 2d 134, decided by the Texas Court of Civil Appeals, Houston.)

The contract between the parties called for services by the engineers in negotiating on behalf of the city with pipeline companies for settlement of the latters' claims for damages caused by flooding in construction of the project. At the instance of the city attorney, other engineers were engaged to represent the city in those negotiations. The court decided that plaintiffs were entitled to the compensation of which they were thus deprived.

But as to supervision of certain construction covered by the contract, the engineers had signed a waiver of right to perform and be paid. The court ruled that the waiver was binding on the engineers even if, as claimed by them, they unwillingly signed under stress of need for money.

The plaintiffs performed certain surveying services not provided for in the contract, but beneficial to the city and performed at the instance of its director of public utilities. The court decided that plaintiffs were entitled to reasonable pay.

A Texas statute provided for the assessment of attorneys' fees against a "corporation" for unjustified refusal to pay a claim, thereby necessitating suit to enforce payment. The Court of Appeals ruled that the statute must be interpreted as applying only to private corporations, and not to public corporations, despite a municipality's engaging in public-utility service such as a private water company might render.

Rights of landowners next to excavation job

THE PROBLEM: *Property owners claimed damages against a contracting company that constructed an approach to a tunnel for the Port of New York Authority. Did they prove right to damages: (1) for injury to their property caused by concussion in blasting operations, and (2) for trespass upon their land?*

THE ANSWERS: (1) No. (2) Yes. (Flinn v. Gull Contracting Co., 183 N. Y. Supp. 2d 806, decided by the New York Supreme Court, Special Term, New York County.)

The court said that plaintiff failed to prove that the concussion was due to negligent blasting. The court noted that the New York Supreme Court, Appellate Division, had decided that a contractor who carries on blasting operations in the course of public work is not liable for damage to property caused by concussion unless there is proof that the work was negligently done. But in the Flinn case, the court decided that plaintiffs were entitled to $4,000 damages for actual trespass by the contractor upon their property by removing a shed, excavating on the land, and using the land for machinery storage.

Wages rise after bid

THE PROBLEM: *An accepted bid to construct a powerhouse and appurtenances for the U. S. Corps of Engineers was based upon prevailing wage costs and an abundant supply of labor in the area when the contract was awarded. Very shortly thereafter, the Atomic Energy Commission inaugurated a vast project nearby and established wage rates considerably higher than had previously existed in the area. The contractor on the powerhouse project sued the government for the increase in labor cost resulting from the Atomic Energy Commission's project. Was the contractor conditionally entitled to maintain the suit?*

THE ANSWER: Yes. (Bateso-Stolle Inc., v. United States, 172 Fed. Supp. 454, decided by the United States Court of Claims.)

The court decided that the contractor's right to collect depended upon proof that its wage costs were necessarily increased by the competition of the Atomic Energy Commission in the labor field, proof as to whether the Corps of Engineers knew of the Atomic Energy project, and whether the plaintiff contractor knew of it. The court referred the case to a commissioner for development of the facts on those points.

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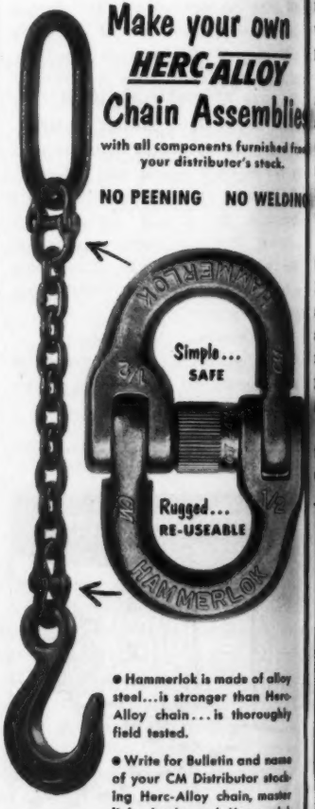
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The self-propelled, rubber-mounted Austin-Western hydraulic crane proved a valuable aid on the Bero Construction Co.'s $6,500,000 New York Thruway project.



Case history

Versatile hydraulic crane speeds highway project

"It's fast, mobile, and versatile. We use the Austin-Western hydraulic crane to do just about everything on the job," reports Norman J. Maggione, general superintendent and vice president of the Bero Construction Co., Waterloo, N. Y.

Bero's $6,500,000 project, a part of the Niagara section of the New York Thruway, called for six bridges in 1¼ miles. The firm's Austin-Western reportedly cut in half the time previously required for setting bridge panels. "It maneuvers easily among tubular pilings and can turn on a dime," states Maggione.

For further information write to Austin-Western, Construction Equipment Division, Baldwin-Lima-Hamilton Corp., Dept. C&E, 601 N. Farnsworth Ave., Aurora, Ill., or use the card at page 18. Circle No. 49.

Nevada issues semiannual highway progress report

A total of $134 million in state highway projects is currently under design in Nevada. This includes over 170 miles of interstate routes costing some $114 million, nearly 190 miles of primary routes costing about $18 million, and 60 miles of secondary roads costing $2 million. These latest figures were made public by the highway department's semiannual road progress report.

The report also shows that, as of April 1 of this year, current construction contracts totaled $4,375,000. Of the total mileage this covers, 61 miles are on the primary system and 29 miles are on the secondary system.

The progress sheet, in reviewing the past 4-year period, reports that 1,037 miles of road was completed at a record cost of $53 million—an amount that exceeds funds spent on road construction in the first 23 years of department operation, beginning in 1917.

Copies of the report may be obtained by writing the department in Carson City.

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Why is this one hard-facing alloy so superior on teeth? *No other hard metal equals TUBE BORIUM in straight abrasion resistance.* Its deposits are thickly peppered with tiny tungsten carbide particles. Wear is virtually defied by this hardest-of all man-made metals.

More expensive in first cost, Tube Borium shows excellent economy in overall service life, outlasting other materials many times over. And longevity is not your only benefit. Remember, one major cost of any hard-facing application is welding time. Use the best, Tube Borium, and you'll save several applications of less effective alloys besides eliminating needless downtime!

Your Stoody dealer (check the Yellow Pages of your phone book) will supply details, literature or recommendations. Ask about Tube Borium—or write direct.



SHOVEL TEETH *wore out in one 8-hour shift. A few beads of Tube Borium applied during noon break prolong life 6 or 8 full shifts. They are then repointed and hard-faced for further use.*



DRAG LINE TEETH *used in slag dump were hard-faced with Electric Tube Borium—outlasted unprotected teeth 9 to 12 times.*

TUBE BORIUM is available in stick form for oxy-acetylene or manual electric application. Also in continuous wires for automatic and semi-automatic electric application. Various mesh sizes for individual uses.



DITCHER TEETH—*A few ounces of 30-40 Electric Tube Borium on points of teeth increased life 6 to 8 times over factory originals.*

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management

Tubs full of inventory

30,000-card system maintains continuous inventory of million-dollar parts stock for distributor



Some 30,000 VISIrecord cards filed in six tubs provide a complete record of the huge inventory of parts maintained by The Cornelius Co., Albuquerque. This parts department employee is picking out one of the cards to bring the information up to date.

Keeping a complete, accurate, and continuous inventory of a million-dollar parts stock is no small undertaking. Yet this set of records may well be the decisive factor in the battle to make the parts department pay the distributor a profit.

In the offices of The Cornelius Co., Albuquerque, one section with four employees maintains just such a parts inventory on 30,000 cards of a 6-tub VISIrecord system. The complete data on every item in the parts stock is right at the fingertips of the assistant parts manager and his staff.

In seconds, they can pick out the inventory card for any desired item in stock. The card shows not only the number of such items on hand, but also indicates the turnover of this item. This record enables the



W. H. "Bill" Cornelius, Jr., president of the firm, keeps a close watch on the parts department operations. The firm keeps this department in the black despite the unusually large number of items it has to keep on hand.



A closed-circuit teletype system connects the office with Farmington and Roswell branches and keeps the parts departments in direct communication. Branches can find out immediately which parts are available for orders.

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You get engines tailored in power, size and weight to your exact needs—20 to 1650 H.P. in only three cylinder sizes.

Because of wide interchangeability of parts within the family, replacement parts cost less. You can protect new engines with current parts inventories. You can also meet changing horsepower needs and still keep the benefits of present operating know-how, maintenance training and existing parts inventories.

Wherever you use engines, you'll find Series 53*, 71* and 110* GM Diesels will raise your productivity—and profits. Your GM Diesel distributor can prove it—he's in the Yellow Pages under "Engines, Diesel," or write us direct.

**Refers to cubic inches displacement per cylinder.*

parts manager to anticipate needs and maintain ample stocks of the most commonly used items. At the same time, he can cut down on stocks of slow-moving parts. In this way, he can maintain the balance between inventory and sales that spells the difference between profit and loss for the department.

Three of the VISIrecord tubs are used to carry the inventory of parts for the major lines handled by The Cornelius Co., lines that include Allis-Chalmers and others. The other three tubs itemize parts for the many remaining lines.

This inventory is complicated by the fact that the company maintains branch stores in Farmington and Roswell, N. Mex. Minimum parts stocks are maintained at these branches under control of the master VISIrecord system at the home office. A closed-circuit teletype connecting the three stores keeps the parts departments in constant touch. The branches can get immediate information on parts available and can place orders accordingly.

Another teletype, hooked up to the nation-wide system, speeds the placement of orders with manufacturers that are located in distant parts of the country.

W. H. Cornelius, Jr., president of The Cornelius Co., and parts manager Doyle Poff take pride in the fact that their parts department operates at a profit, even though their remote location requires an unusually large parts stock.

THE END

"I would consider it a favor, Mrs. Johnson, if you'd confine your filing to the office."



Prestressed concrete featured in new film

■ The principles and uses of prestressed concrete are explained in a 22-minute sound and color film recently produced by Calaveras Cement Co., a division of The Flintkote Co. It shows prestressed units being made and installed on a variety of construction jobs and tells something of their history and future. Narration is by Professor T. Y. Lin of the University of California.

The 16-mm film is entitled "Prestressed Concrete" and may be borrowed without charge from Calaveras Cement Co., 315 Montgomery St., San Francisco 4, Calif.

Colton Chemical expands

■ Colton Chemical Co., Cleveland, Ohio, a division of Air Reduction Co., Inc., is building a new resin plant on the West Coast. Located at City of Industry in Los Angeles County, Calif., the project includes a sales office, technical service laboratory, and warehouse. Flexbond and Vinac resins will be produced at the plant.

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management

Public relations gives a new look to veteran firm

by BILL DARDEN, feature editor



Charles L. Klotzer (right), director of public relations for Fruin-Colnon Contracting Co., discusses a safety performance report with Warren Hargreaves, safety director for the St. Louis firm.



Company data sheets to be included in a sales proposal brochure are selected from a file in the public relations department office. The shelves of loose-leaf binders at the top of the picture contain some 10,000 photographs of Fruin-Colnon projects.

The Fruin-Colnon Contracting Co. of St. Louis, Indianapolis, and San Francisco, is one of the distinguished old construction firms in the country. If you go by the record, that is.

And the record is perfectly clear; the firm has operated continuously since 1873.

But a history can sometimes give a false impression, and the words "distinguished" and "old" can be misleading. One might picture a reliable but somewhat staid company, conservative in policy and owned and managed by one or more distinguished, white-haired gentlemen.

The facts couldn't be farther from this picture. Except for its experience and reputation, Fruin-Colnon has all the earmarks of a relatively new company. Employee-owned, its management is young, its policies are progressive, and its rate of growth is impressive—particularly during the last decade under a management headed by John P. Soult, 42-year-old president.

Sound, progressive management policy—good modern business practice, in other words—is the factor most responsible for this veteran company's splendid status today. And a key aspect of this successful management policy is the firm's public relations program.

Highly developed public relations programs are something of a rarity in the construction industry. Too often, a firm's effort along these lines is a haphazard affair. And rare indeed, except in the case of the giants, is the company that has a full-time public relations director.

Fruin-Colnon's public relations program might well be the envy of any big business. Under the direction of experienced, energetic Charles L. Klotzer, it encompasses all publicity and advertising, promotion, employee relations, and communications. Whether aiding the company's sales effort or dealing in one of those intangibles that are a part of public relations, it enjoys the respect and cooperation of the entire firm.

Begun in 1956

The present public relations program is actually only a few years old. Klotzer joined the company in 1956 and greatly expanded the existing program.

Fruin-Colnon's executive vice president, Aaron A. Pierson, describes the evolution of the program thus:

"Back in 1953 we began mailings to our clients, prospects, etc., on a somewhat irregular basis. That went along for a while, and then we decided to engage the services of a public relations firm. We tried this arrangement for about a year and a half, but it wasn't satisfactory. We were constantly arguing with the agency because we saw things from a contractor's viewpoint and they didn't.

"Finally, we decided our public relations effort needed to be carried on from within the company. That's when we got Charlie. And we're mighty pleased with our decision."

Serving the sales effort of the company is an important function of Klotzer's department, and a highly efficient system has been devised for preparing the sales proposal brochures that are sent to prospective clients.

Information about every conceivable phase of Fruin-Colnon's organization and experience is contained on some 200 printed data sheets stockpiled in the public relations department. These data sheets are indexed on a master order form provided to all divisions of the company.

When a divisional sales department wants to send out a sales proposal, it checks the data sheets pertinent to this proposal on the order form and sends the form to the public relations department, where the checked data sheets are assembled in moments.

These data sheets are bound into an attractive white plastic ring binder, on the front of which the client firm's name is stamped in gold. Together with a cover letter and particular material of a proposal nature, the brochure is sent off to the prospective customer.

The data sheets mentioned above cover such broad areas as company history, subsidiaries, and management; financial statements and references; personnel; labor relations; safety record; equipment and facilities; experience resumes; descriptions of work done in specialized areas of construction; and project summaries. In addition, many isolated areas are covered, such as accounting, insurance, sample construction schedules, reprints of publicity and advertisements, typical architectural drawings, and various kinds of testimonials.

Such a variety of available information is necessary because of the diversity of operations in which Fruin-Colnon is involved. The company is a designer, as well as a contractor. Among its projects are industrial, commercial, heavy, apartment-type residential, marine, bridge,

A typical memo from Fruin-Colnon's PR department . . .

TO: Project supervisory personnel
FROM: CLK
RE: Public relations in connection with successful windup of a project

Purpose

The completion of a successful project should be utilized to create desirable impressions with the following:

a) The client and related industry
b) All suppliers and subcontractors
c) The locality of the project
d) Various trade and other publicity media
e) The Fruin-Colnon organization

Activities

1. *Letters of appreciation.* Upon the successful completion of a project, it is recommended that the president send a letter of thanks to all suppliers and subcontractors as per a list supplied by the Division.

2. *Silver shovel presentation.* As in the past, attempts will be made to include Fruin-Colnon in all dedication or opening ceremonies by having a representative present an inscribed shovel to the client. While this presentation always takes place on jobs completed for private clients, it is strongly recommended for public projects as well.

3. *Releases.* Efforts should be made by the PR department to distribute to various media a summary release and photo. This publicity will be aimed at related industrial or trade areas and local newspapers.

4. FORECITE *coverage.* Shortly before completion, a windup feature should be presented in FORECITE, including if possible photos of job personnel. (Of course, the project will have been covered in earlier issues as well.)

and other kinds of work both in public and private construction. The company also works abroad, as well as throughout the continental United States.

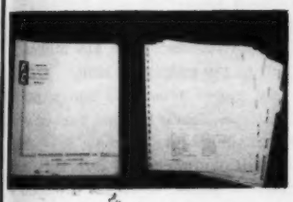
The operations of Fruin-Colnon Co. are administered by five divisions. The Western Division has headquarters in San Francisco, the Indiana (Eastern) Division is headquartered in Indianapolis, and the Building and Industrial, Heavy, and Engineering Divisions are located in St. Louis, home office of the company.

Public relations for all divisions is channeled through the St. Louis office.

In addition to the data file, the public relations department has a file of nearly 10,000 photographs from which to draw if job pictures are requested.

Among Klotzer's duties is, of course, the preparation of all publicity releases on the company, its personnel, and its operations. These go to newspapers, periodicals (including the trade press), and radio and television stations. Wherever a Fruin-Colnon job is being done, an attempt is made by job personnel in cooperation with the company PR department to keep the local press informed of important or unusual phases of the project.

Klotzer also handles the company's advertising, does research in connection with any speeches company officials may have to make, works with



Fruin-Colnon's sales proposal brochure consists of a white plastic ring binder (left) into which are placed pertinent data sheets containing information about the company's history, organization, operations, and experience. The sheets are tab-indexed, as at right.

an artist in design of project signs, and edits the company's handsome magazine, *ForeCite*.

The public relations department has been building a film library, and there are about 25 color films on Fruin-Colnon projects available for showing to prospective customers, civic or fraternal groups, and others.

There is a mailing list of over 1,500 clients, prospects, suppliers, labor officials, the press, and others, which is constantly being used for a variety of mailings, including the company magazine.

Fruin-Colnon has an interesting little promotion gimmick that has proved a big hit with customers. The first spadeful of dirt turned at the ground-breaking ceremony is handled with a silver-plated shovel. Later this shovel is inscribed with information about the project, mounted on a piece of polished walnut, and presented to the customer at the dedication ceremony.

One of Fruin-Colnon's more important communications efforts is a two-day management conference held each January. This is a carefully planned brainstorming session in which there is an exchange of ideas and suggestions for bettering the company's management procedures. Each year, a number of good ideas come out of the sessions and are put into practice.

Approximately 150 persons, ranging from job superintendents up to the top officers, attended this year's meeting. The conference wound up, as every year, with a gala company banquet for all salaried personnel and others who have been with the company 10 years, plus wives and hus-

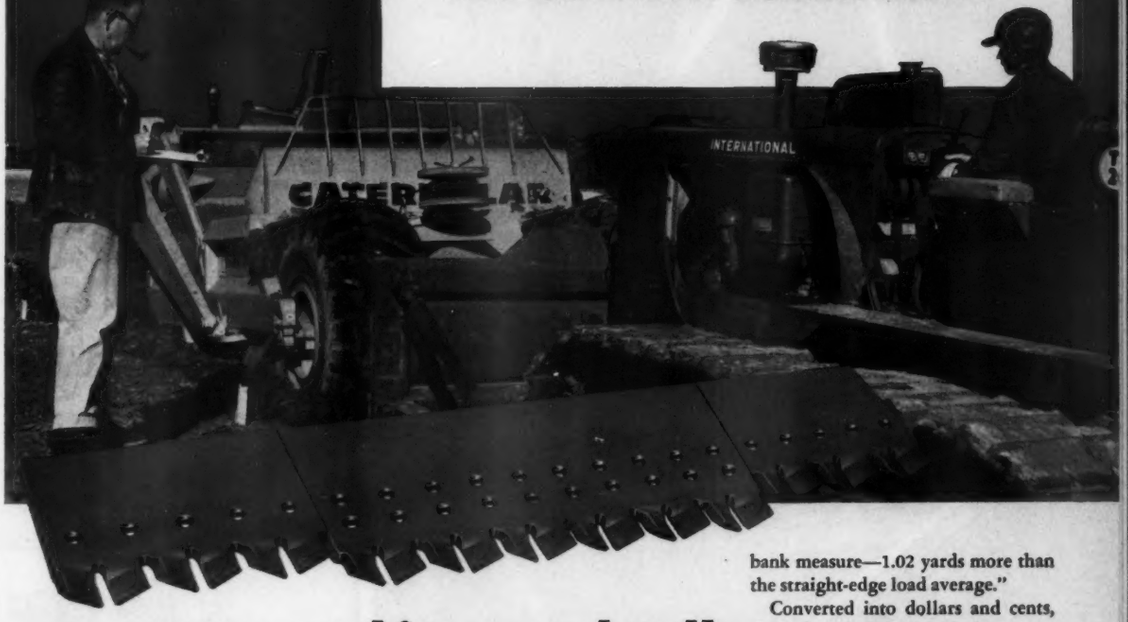
(Continued on next page)



F. C. Ahrens, vice president and manager of Fruin-Colnon's Building and Industrial Division, and Aaron A. Pierson, executive vice president, are typical of the firm's youthful management.

In Texas Field Tests*

Shunk 'Gator Twistooth® Blade picks up 1.02 more yards per load, cuts load travel distance 28.4%



an extra yard in every load!

SHUNK 'GATOR TWISTOOTH BLADES *greatly increase earthmoving efficiency*—a fact proved conclusively in recent impartial tests at Texas A & M's Heavy Equipment Operators School.

Two identical borrow pits—composed of hard clay and sandy clay with high loading resistance—were staked out for the test. Two tests of 40 cycles each were completed with an International TD-20 Tractor push-loading a Cat DW15 Scraper. In the first test a standard-edge scraper blade was used; in the second, the standard-edge was replaced by a Shunk Twistooth Blade. To determine the volume of earth excavated, pits were cross-sectioned before and after each test.

Here are highlights of the test results: "Load travel distance averaged 161 feet with the Twistooth Blade and 225 feet with the straight-edge. Furthermore, the Twistooth picked up an average load of 9.02 cu. yds. by bank measure—1.02 yards more than the straight-edge load average."

Converted into dollars and cents, these figures represent an important profit potential. For example, let's take a scraper on a job averaging about 90 complete cycles in a ten-hour day. With dirt-moving costs between 40 and 50 cents a yard, this means that the Shunk Twistooth Blade, by adding an extra yard to every load, could earn $36 to $45 *more net profit* every day from every scraper on the job!

*Conducted at The Heavy Equipment Operators School, Engineering Extension Service, Texas A & M College, under the Direction of R. L. Peurifoy, noted engineer-author of *Construction Planning, Equipment and Methods* and other technical books and articles. Tests are not to be construed as endorsements of manufacturers' products by Texas A & M College.

SUMMARY OF TEST RESULTS

	Standard Edge	Twistooth Blade
Average load by bank measure	8.00 cu. yds.	9.02 cu. yds.
Average load travel distance	225 ft.	161 ft.
Average feet of loading per cu. yd.	28.1 ft.	17.9 ft.



SHUNK MANUFACTURING COMPANY • BUCYRUS, OHIO

BEST BLADES MADE **Shunk**

For more facts, use Request Card at page 18 and circle No. 404 ▶



Fruin-Colnon is working right in its own back yard on this project, a $13 million, 6-building apartment project in downtown St. Louis. The construction firm's own offices are in the 7-story building, right.

(Continued from preceding page)

bands. Some 550 persons attended January's banquet.

It is Klotzer's job to plan and coordinate the conference and banquet. Klotzer also served as conference chairman this past January.

And there are other aspects of communications that come under Klotzer's supervision. Regular bulletins are issued to stockholders. Copies of important articles featuring the company are mailed out regularly to all offices, including field ones. Bulletin boards on all floors of the company's 7-story headquarters building in downtown St. Louis are maintained by his department, and they feature clippings, announcements, and other items of interest to employees.

From time to time, the public relations department revises the company brochure, which contains facts about Fruin-Colnon engineering and construction services and reproductions of photographs of important jobs.

Klotzer also works with the company's full-time safety director, and establishes personnel policies in cooperation with management insofar as the firm's 300-odd salaried employees are concerned.

The man who executes these various duties of the public-relations department, Fruin-Colnon's indefatigable Charlie Klotzer, brought a variety of public relations and writing experience to the company when he joined it in 1956.

Klotzer was born in Germany 34 years ago and fled that country with his family during the Nazi regime. He lived in China for 8 years before coming to the United States in 1947. He served in the U. S. Army, worked on several newspapers including his own, and served as director of public relations for the Jewish Federation of St. Louis. A student, as well as a man of practical experience, he is working on his doctor's degree in political science.

And how does Fruin-Colnon itself feel about its public relations program? Again, vice president Pierson:

"Of course a lot of public relations is intangible, but all of us feel we get something out of the program. Certainly good publicity is the best kind of advertising you can get.

"Good publicity doesn't just mean a lot of it, either; it means the kind



Fruin-Colnon's monthly magazine, ForeCite, goes to a mailing list of some 1,500 clients, prospects, subcontractors, suppliers, labor officials, press representatives and others.

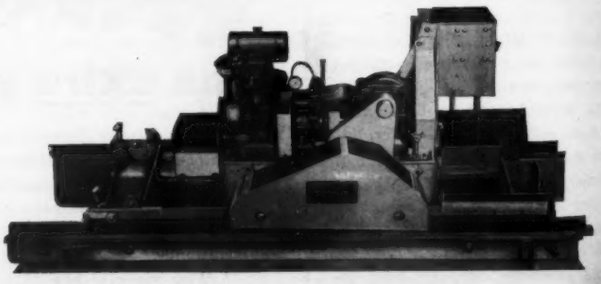
that is based on facts and gives you acceptance in the industry."

That Fruin-Colnon has achieved an enviable standing—and is continually improving that standing—in the industry is indicated by its growth in work volume: from $19 million in 1952 to $70 million in 1959.

Of course it isn't all due to public relations. This is but one part of good management—an area in which Fruin-Colnon excels. But this progressive public relations program is a pretty good indicator that the company is not afraid to use the best of modern business techniques. THE END

◀ For more facts, use Request Card at page 18 and circle No. 405





PAVING IS THE ONE PLACE CONTRACTORS CAN CUT COSTS!
DOTMAR PAVER IS THE ONE MACHINE THAT CAN DO IT!

The Dotmar paves up to 10' per minute of finished curb and gutter. Quickly returns its cost. Easy to operate. Paves sidewalks integral with curb and gutter, sidewalks alone, highway median strips and widening strips. Only machine permitting use of steel reinforcement rods and division plates.

Saves 1/3 to 1/2 over hand method. Tamps and vibrates the concrete. Also models for bituminous curb. Send for catalog.



Makers of Magnalite Forms, Brush Cutters, Roadside Seed Bedders, Porta-Mixers.

Dotmar INDUSTRIES Inc.
519 HANSELMAN BLDG. KALAMAZOO, MICHIGAN
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COSTS!
DO IT!

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This is the fifty-fifth of a series of articles on Construction Management by George E. Deatherage, P. E., The National Schools of Construction, Satsuma, Fla. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by George E. Deatherage & Son, Construction Consultants, Satsuma, Fla.

Roads and streets:

Control of the work and materials

by GEORGE E. DEATHERAGE, P. E.
construction consultant



Considering road construction procedures in Florida as being reasonably typical, it is easy to see that control of the work is split between the builder and the highway department.

The state highway engineer, for instance, has supervision of all the work, which must be performed to his satisfaction. He also decides all questions, difficulties, and disputes that may arise concerning the interpretation of the plans and construction. And his estimates and decisions on all claims, questions, and disputes are final.

Plans and drawings

Plans, furnished by the department, will, in general, show alignment profile grade, typical cross sections of improvements, and general cross sections. Structure plans, in general, will show in detail all dimensions for the contemplated work; when they do not, they show general features and such details as are necessary to give a comprehensive idea of the structure.

All authorized alterations affecting the plans are made in writing, and no changes are made on plans or drawings after approval of the engineer, except by the direction of the engineer.

Working and detail drawings required for any part of the finished structure are furnished by the contractor on the size sheets required by the engineer.

Working drawings for steel structures consist of shop-detail, erection, and other working plans showing details, dimensions, sizes of material, and other information necessary for the complete fabrication and erection job.

Working drawings for concrete structures consist of such detailed plans as may be required for the work, and which are not included in the plans furnished by the department. These may include plans for falsework, bracing, centering and form work, masonry layout diagrams, and diagrams for bending reinforcing steel.

The contractor submits for approval of the engineer three sets of any required preliminary detailed shop or working drawings. They are submitted in time for discussion and correction prior to the start of the work they cover. Any work done or materials ordered for these structures prior to approval of the drawings is done at the risk of the contractor. One set of these drawings is returned to the contractor, approved or marked with corrections; the other sets are retained by the engineer.

The engineer's approval of the contractor's working drawings does not relieve the contractor of responsibility for accuracy of dimensions and details, or of mutual agree-



ON THE JOB
... ON THE TOUGHEST JOBS
ARCTIC BOY
portable water coolers

... built to take a beating on construction jobs, in mines, on the farm, railroad crews, on service trucks ... wherever men work and the going is rough.

They keep drinking water cool and sanitary, keep worker efficiency up. And note these features:

- HOT DIPPED Galvanized or stainless steel insets
- Sparkleen plastic liner ... non toxic, prevents corrosion
- Large opening, easy to ice and clean
- Extra large insulation space



Send for free booklet "Care and Use of Your Cooler." Write Dept. C-42

Deluxe

SCHLUETER MFG. CO. St. Louis, Mo.

For more facts, use Request Card at page 18 and circle No. 407

Again Coffing Brings You a New Line of Hoists



For the second time in less than a year Coffing has introduced a new hoist line to give you easy, safe, positive efficient lifting power at moderate cost.

The new RA Series Safety Pull Aluminum Ratchet and Pawl Lever Hoist is easy to operate—requires minimum handle pull—only 59 pounds for the ¾-ton model to 97 pounds for the 6-ton model. It may be operated from either side and the design prevents freezing a load. Load rotation is easy because of ball thrust bearings in the load hook assembly.

Safety has been built into the hoist. It will not ratchet under load if handle is released nor will it free chain. Controls are protected from inadvertant shifting. The bottom stop eliminates any hazard from the handle being released unintentionally and prevents handle from being moved to a position parallel to the load chain which would develop undesirable twisting action. The exclusive safety handle bends to indicated overload.

Strength without excess weight in the new hoist is achieved by a special aluminum alloy which is used in the body and handle. Long service life has been provided by the high tensile material in the chain retaining guide, heat treated load sheave and the plated, high tensile, heat treated alloy steel link chain. Maintenance is held to a minimum by the rugged construction and simplicity of design.

The new Coffing RA Series Safety Pull Aluminum Ratchet and Pawl Lever Hoist is available in six models with capacities from ¾ to 6 tons. Ask your distributor or write for Bulletin ADH-86.

COFFING HOISTS
DUFF-NORTON COMPANY
COFFING HOIST DIVISION • Pittsburgh, Pa.

COFFING HOISTS
Ratchet Lever • Air
Hand Chain • Electric

DUFF-NORTON

DUFF-NORTON JACKS
Ratchet • Screw
Hydraulic • Worm Gear

For more facts, use Request Card at page 18 and circle No. 408

(Continued from preceding page)

ment on dimensions and details. The contract price includes the cost of furnishing all working drawings; no extra compensation is allowed for them.

The specifications, plans, special provisions, and all supplementary documents are essential parts of the contract; a requirement occurring in one is as binding as though it occurred in all. In case of discrepancy, figured dimensions govern over scaled dimensions, plans govern over standard specifications, and special provisions govern over both standard specifications and plans.

The contractor is supplied with two copies of the plans and special provisions; copies of the standard specifications may be purchased from the department. One copy each of plans, specifications, and special provisions must be available at the work at all times.

The contractor has on the work at all times a competent superintendent or foreman, capable of reading and understanding the plans and specifications, who gets instructions from the engineer or an authorized representative. The superintendent has full authority to execute the orders or directions of the engineer without delay and to supply promptly such materials, tools, equipment, labor, and incidentals as may be required. Such superintendence is furnished, regardless of the amount of work sublet.

Construction stakes

The engineer furnishes and sets construction stakes establishing lines and continuous profile grade, roadway and waterway center lines, and bench marks for bridge work, and gives the contractor all the necessary information relating to lines and grades. If bridges are being built, and the contractor requests it, the engineer furnishes stakes or points determining the center lines of all piers, pedestals, or abutments, together with stakes determining the angles of the wings or retaining walls.

The contractor furnishes, without charge, all additional stakes, all templates, and other material for marking and maintaining points and lines given, and furnishes the engineer such incidental labor as is required in establishing points and lines needed for the work. The contractor handles the work in accordance with the engineer's stakes and marks. The contractor is held responsible for the preservation of the stakes and marks; the cost of replacing them, if they are destroyed or disturbed by the contractor, is charged against payment for the work.

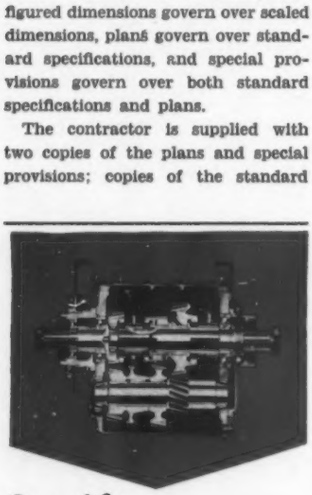
Duties of assistants

The state highway engineer can appoint assistants, and they are authorized to inspect all work done and material furnished. This inspection can extend to any part of the work, and to preparation, fabrication, or manufacture of the materials to be used. But they are not authorized to revoke, alter, or waive any requirements of the specifications. They can reject materials or suspend work until any questions that have arisen have been decided by the engineer. The contractor is notified in writing of any suspension in the work, and the reasons for it.

The contractor gives the engineer every reasonable facility for determining whether or not the work is performed, and materials are used, in accordance with the plans and specifications. If the engineer requests, the contractor must remove or uncover portions of the finished work, as directed, for examination. Afterward, the work is restored by the contractor. If the work is unacceptable, the cost of uncovering or removing, as well as replacement or making good on the work, is done at the contractor's expense.

When the federal government pays for a portion of the work, the construction is subject to inspection by its representatives. But this does not make the federal government a party to contracts.

If the contractor fails or refuses



Specify
FULLER
Specify the
MODEL
For medium-heavy duty trucks and tractors specify the
FULLER '65 SERIES
3-SPEED AUXILIARY

- High capacity
- Widest range of ratios
- Top-mounted power take-off optional
- Low initial cost, reduced maintenance
- Available from all truck manufacturers on specification

65 SERIES (Medium-heavy-duty) RATIOS

MODEL	SPLITTER RATIOS High	SPLITTER RATIOS Intermediate	DEEP REDUCTION Low
3-A-65	.754	1.00	2.221
3-B-65	.804	1.00	1.239
3-C-65	.754	1.00	1.239
3-D-65	.804	1.00	2.221
3-E-65	.804	1.00	1.74
3-F-65	.754	1.00	1.74
3-G-65	1.00	1.32	2.221
3-H-65	1.00	1.32	1.74



Specify *Specify the MODEL*

FULLER MANUFACTURING COMPANY
(Transmission Division)
KALAMAZOO, MICHIGAN
Subsidiary EATON Manufacturing Company

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Accurate...Dependable...Economical
PLUS PAYLOAD BONUS!

Look at these capacities! When an Etnyre FX-500 distributor is mounted on a tilt cab chassis:

1500 gal to meet 18,000 lb axle limit
1760 gal to meet 20,000 lb axle limit
2100 gal to meet 22,400 lb axle limit

Similar increased maximums on semi-trailers and tandem axle mountings. And dependable operation . . . uniform, accurate distribution are typical of the results you can always expect from an Etnyre. No-streak spraying with clean, sharp edges is insured by Etnyre's exclusive triple-lap nozzle coverage.

Other FX-500 Quality Features:

- Hardened aluminum jacketing over 2" Fiberglas insulation which is reinforced with molded asbestos blocks.
- Stainless steel jacket near burners and exhaust stacks.
- Stainless steel pump heat jacket.
- Aluminum fenders and mud flaps.

You're familiar with Etnyre's accuracy and dependability . . . now you can get maximum payload too . . . for maximum profit. Investigate today — find out how a "Black-Topper" can handle more work, faster, better, more economically. Write E. D. Etnyre & Co., Oregon, Illinois.

SEE YOUR ETNYRE DEALER

ETNYRE
BITUMINOUS DISTRIBUTORS

For more facts, use Request Card at page 18 and circle No. 410

CM HOISTS
. . . choice of the wise buyer who compares



CM HOISTS AND PULLERS are ruggedly constructed to give you years of trouble-free service. Yet they are unusually light . . . easy to handle because they are constructed of the strongest alloys of steel and aluminum. Equipped with famous CM-Alloy flexible, welded alloy steel load chain.

CM CYCLONE
- Capacities from ½ to 10 ton.
- 1-ton model weighs only 36 pounds.
- 96% efficient—easy to operate.
- Lifetime lubricated.

CM PULLER
- Capacities ¾, 1½, 3 and 6 ton.
- ¾-ton model weighs only 13 lbs.
- Compact: stores in tool box.
- Lifts or pulls at any angle.
- Lifetime lubricated.

Write for catalog and name of your nearest CM dealer.

CM HOISTS

CHISHOLM-MOORE HOIST DIVISION
COLUMBUS McKINNON CHAIN CORPORATION
TONAWANDA, NEW YORK
REGIONAL OFFICES: NEW YORK, CHICAGO, CLEVELAND
In Canada: McKinnon Columbus Chain Limited, St. Catharines, Ont.

For more facts, circle No. 411

Services rendered by troopers on the Kansas Turnpike in a month included helping a patron find lost dentures, removing sheep caught in a right-of-way fence, escorting hitchhikers from the pike, reporting a tornado, putting out a fire in a car, and helping to repack a patron's suitcase.

Need HOSE in a *HURRY?*

Suction • Water • Steam
Air • Multi-Purpose
Discharge • Pile Driver



Wherever your job is—*whenever* you need hose—there's a Continental Warehouse nearby stocked to give you any kind of hose you want—*when* and *where* you want it.

There's no need to wait for distant shipments—no need to stop the job—no need to lose profits.

Any time you need hose call Continental. You'll like the fast service and dependable quality you get from these warehouses:

BALTIMORE, Md. — CLEVELAND, Ohio
BOSTON, Mass. — DETROIT, Mich.
CHICAGO, Ill. — MEMPHIS, Tenn.
PHILADELPHIA, Pa.
ST. LOUIS, Mo.

FIND US FAST IN THE YELLOW PAGES

CONTINENTAL SUPER-HIGHWAY HOSE
This hard working, high-pressure water hose has top grade rubber tube wrapped with frictioned duck thoroughly bonded to tube and cover. Red rubber cover resists abrasion, cutting, gouging. Sizes: 1¼", 1½", 2", 2½", 3", 3½", 4". Ask for latest catalog showing full line of CONTRACTORS HOSE, HOSE FITTINGS, BOOTS and CLOTHING.

HOSE by CR **CONTINENTAL**

CONTINENTAL RUBBER WORKS • 1989 LIBERTY ST. • ERIE 6 • PENNSYLVANIA

For more facts, use Request Card at page 18 and circle No. 412

THE TREND IS UP
when you use
McKISSICK
THE BEST SNATCH BLOCK FOR YOUR PURPOSE
FROM McKISSICK'S FAMILY OF CHAMPIONS

- 4 to 40 Tons working capacities
- 4½ to 18" Diameter Steel Sheaves
- Swivel Hook or Swivel Shackle
- Drop forged, Heat treated, Swivel Hooks, Yokes & Shackles.
- Be Specific, get McKissick



THE SUPER





THE HEAVY

McKISSICK PRODUCTS CORPORATION
Box 2496 Tulsa, Oklahoma

For more facts, use Request Card at page 18 and circle No. 413

to remove or renew any defective materials or work, or to make acceptable repairs, the engineer has the authority to have the work corrected at the contractor's expense. The cost is paid out of money due the contractor or is charged against the contract bond. Continued failure of the contractor to make necessary repairs is sufficient cause for the department to declare the contract forfeit. The department can then handle the job itself or contract with other firms for the work. All costs incurred are charged against the defaulting contractor and deducted from money due him, or charged against the contract bond.

Final construction inspection

When all the work has been done satisfactorily, the engineer makes his final inspection. On not less than 7 days' notice from the contractor, the engineer makes a semifinal inspection; if at this time all work is completed satisfactorily, it constitutes the final inspection. If the work is found unsatisfactory, the engineer instructs the contractor as to work to be done before the job can be accepted. The contractor complies with this before another inspection is made; then this inspection constitutes a final inspection if the work is found satisfactory.

The contractor maintains the work in a first-class condition until it has been completed and accepted by the engineer, who gives the contractor a written notice of final acceptance.

Claims

Claims arising from conditions not under control of the department are presented within one week from the start of such a condition. Claims arising from plan changes, engineering errors, or other conditions under control of the department are presented before work starts under such a changed condition. In case of emergency, notice of such a claim can be given by telephone.

In any case where the contractor deems that extra compensation is due for work or material not clearly covered in the contract or ordered by the engineer as extra work, the contractor notifies the engineer in writing of intent to make claim for extra compensation before starting work on which he bases the claim. If such notification is not given, and the engineer is not afforded proper facilities by the contractor for keeping an account of the actual cost as defined for force account, the contractor agrees to waive the claim for extra compensation. Such notice by the contractor, and the fact that the engineer has kept the account of the cost, is not construed as proving the validity of the claim. If the claim is found to be just, it is paid as an extra.

Control of materials

To facilitate work, the department can be requested to furnish test reports on various materials, but it assumes no obligation to the producer or bidder for the continued quality or quantity of the material.

At the option of the engineer, the sources of materials supply can be approved by the engineer before delivery is started. Representative samples are submitted by the contractor or producer for examination and testing. Only materials conforming to requirements of the specifications and approved by the engineer can be used in the work. And all materials may be inspected or tested at any time during their preparation and use. If the sources prove unacceptable at any time, the contractor has to furnish approved material from other sources. Sufficient notification of the placing of orders for materials is given by the contractor so that testing can be done.

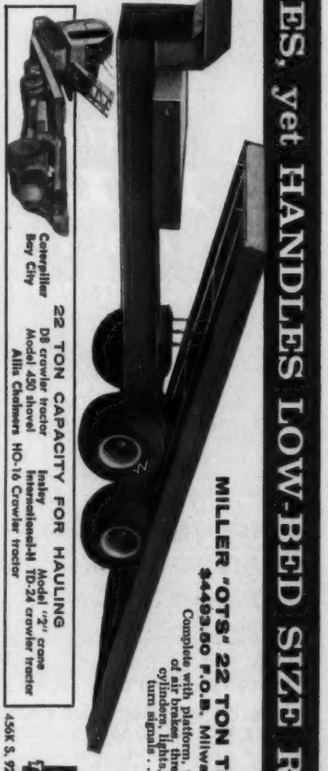
The engineer can inspect materials

(Continued on next page)

LOADS IN 3 MINUTES, yet HANDLES LOW-BED SIZE RIGS!

Most of the heavy rigs you use . . . can be handled easier with less man hours lost in loading on this big new gooseneck Tilt-Top. You save the extra labor cost of detaching platforms from cumbersome low-beds . . . gain Tilt-Top drive on-drive off, loading speed. Standard tilt platform section is 8' x 16' or 20' if desired. Stationary section is 4½' x 8'. See it at your MILLER distributor now!

. . . and just ONE MAN drives on to load



MILLER "OTS" 22 TON TILT-TOP
$4493.50 F.O.B. Milwaukee, Wis.
Complete with platform, tires, two pairs of air brakes, three hydraulic tilt cylinders, lights, reflectors and turn signals . . . tax included.

22 TON CAPACITY FOR HAULING
Caterpillar D8 crawler tractor Bay City
Model 450 shovel
Allis Chalmers HO-16 Crawler tractor
Insley Model "J" crane
International-H TD-24 crawler tractor

Miller Tilt-Top Trailer Inc.
4556 S. 92nd St., Milwaukee 14, Wis.

For more facts, circle No. 414

Construction Camera



An average 3,000 tons of crushed rock daily—and a record 5,800 tons in one day—is loaded by a Hough Model H-120 Payloader to 10-yard haul trucks, working on a highway paving job near Trinidad, Calif. A fleet of 23 trucks makes the 10-mile haul to the stockpile area.



Workmen guide a Stow vibrating screed down the 420-foot length of a 14-beam double-tee bed at the plant of Frontier Dolomite Concrete Products Co., Lockport, N. Y. The company uses a special operating lift that automatically dumps concrete to the forms.



This **IGLOO** is at work saving money!

Yes, IGLOO Water Coolers will save you money. They keep more men on the job more of the time, pay off in employee relations and require no maintenance other than the rinsing any drinking container would require. There should be an IGLOO strategically located for every six to eight workers.

- **IGLOO** is PERMALINED to keep liquids pure
- **IGLOO** has an easy-to-clean round inside bottom
- **IGLOO** is stronger, lasts longer
- **IGLOO** has been proven in use—thousands of times

When you order water coolers specify IGLOO

IGLOO, world's No. 1 Water Cooler, is available in 2, 3, 5, 10 and 15 gallon sizes—23 models in all.

IGLOO No.1 **IGLOO**

Memphis 18, Tennessee

For more facts, use Request Card at page 18 and circle No. 415

(Continued from preceding page)

at the source of supply; in this case, the producer furnishes, free of charge, all reasonable facilities to assist in determining whether the material complies with specification requirements. However, the department assumes no obligation to make such an inspection; responsibility of securing satisfactory materials rests entirely with the contractor.

All materials may be required by the engineer to be subject to test by means of samples or other means at production points, or after delivery, or both. These tests are made by and at the expense of the department. Any materials represented by samples are not used in the work until tests have proved them satisfactory. All samples are furnished by the contractor without charge.

Samples from pavements—and this includes base or surface courses—are furnished by the contractor when required by the engineer. In such cases, the contractor replaces areas where material has been removed without additional compensation.

The practice of accepting certain materials on test of producer's samples, provided that these tests passed requirements of the department's specifications, may be continued as long as the engineer's samples, taken after the material arrives on the job, conform to the producer's samples. Each producer's sample carries a card indicating the project designation, intended use of material, the producer's name, the source of supply, quantity represented by the sample, date sampled, and other information pertinent to the material or the job.

For the verification of weights or proportions and character of materials, and determinations of temperatures used in the preparations of materials and mixtures, the engineer or his authorized representative has access at all times to the job or plants connected with it.

Any man employed by the contractor at the paving plant or on the roadway is subject to orders from the engineer or inspector in the absence of the regular foreman.

Materials are stored so that their quality is preserved and they can be



COMPLETE, POWER and STEERING in ONE PACKAGE

Harbormaster Marine Tractor Outboard Propulsion and Steering gives your craft rugged power, plus complete 360° maneuverability and the advantages of quick installation, operation and maintenance.

Harbormasters are complete units, easily installed for immediate use. They are ideal in shallow or deep water . . . for coastwise service as well as in harbors, lakes, canals, and rivers. Available with direct or remote controls.

Harbormasters have been proved in hundreds of installations. Send for your copy of big, free catalog which gives complete details.

MURRAY & TREGURTHA, INC.

44 Hancock Street • Quincy 71, Massachusetts

For more facts, use Request Card at page 18 and circle No. 416

DON'T THROW AWAY CRACKED DIESEL CYLINDER HEADS

You can save 50% of replacement cost with Factory Rebuilt Swick-Guth Heads. Swick-Guth restores cracked or worn heads, blocks, transmission cases to a Guaranteed good as new condition by the Controlled Heat Process . . . successfully used for more than a Quarter Century.

GUARANTEED TO YOUR SATISFACTION



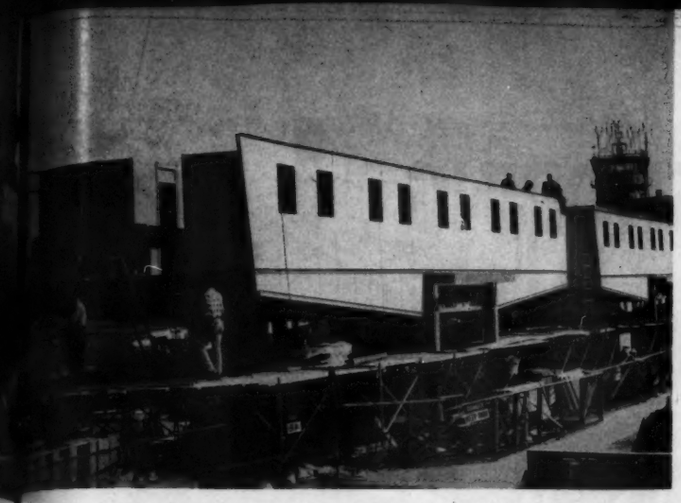
Send today for price list and a free booklet on the famous Swick-Guth Process, and the name of the dealer nearest you.

SWICK-GUTH CO.

McPHERSON KANSAS • FORMERLY GUTH CO.

"SPECIALISTS IN WELDING DIESEL CASTINGS"

For more facts, use Request Card at page 18 and circle No. 417



Airwayte units—tee-shaped structures having 18 compartments where passengers can change clothes, work, or relax between planes—are under construction by crews of U. S. Steel at National Airport, Washington, D. C. Units are supported 9 feet in the air on structural steel frames.



Despite rough terrain in the mountainous Ouachita National Forest in Arkansas, a Lorain hoe averages 1,000 feet of 4-foot-deep and 3 to 4-foot-wide trench per 11-hour day for the 97-mile Arkansas-Louisiana Gas Co. line from the Aetna Pearla gas field near Paris to the main distribution system at Hot Springs.

easily inspected. Material improperly stored can be rejected without being tested.

If the engineer permits, the portion of the right-of-way not required for public travel can be used for storage purposes and for the contractor's plant and equipment. Any additional space required is provided by the contractor at his own expense.

Defective materials

Materials considered as defective are those not conforming to requirements of the specifications; segregated materials, even though they have been previously tested and approved; materials improperly stored; and materials that, in the engineer's opinion, are mixed with an excess of clay, coal, sticks, burlap, hay, straw, loam or earth, or other debris. These are removed immediately from the site at the contractor's expense. Rejected material that has been brought up to standard cannot be used until approval has been given. If the contractor does not remove defective material, the engineer has the authority to do so and replace it with acceptable material. The cost of removal and replacement is then deducted from the money due the contractor.

(Next month's article will deal with "Roads and Streets: Legal relations and responsibility to the public.")

Wire mesh in pavement

■ "Machine Placement of Wire Mesh Reinforcement in Single-Lift Concrete Pavement," a bulletin recently published by the American Road Builders' Association, describes the innovations, including special machinery, that a contractor developed when he was faced with the problem of placing welded-wire fabric both economically and efficiently. As a result of his methods, he speeded up the job and increased his profit.

The paper, first presented at the ARBA annual convention this year, has been printed as Technical Bulletin No. 246. It is available from ARBA, World Center Building, Washington 6, D. C., for 50 cents. Members of ARBA may have a free copy upon request.



TAKE THE "PRESSURE" OFF YOUR AIR COMPRESSOR PROBLEMS . . .

Take "Hardrock Smitty's" advice and **GO SMITH!**

The Smith 125 Air Compressor delivers over 125 cfm day in and day out. Rugged construction, smooth performance built into the Smith 125 means efficient, economical operation.

The Smith 125 has the most wanted features:

- low initial cost
- low operating cost
- easy maintenance
- simple compact design
- 12 volt electrical system
- 125 cfm at 1165 RPM
- availability of parts

Compare price . . . compare job results—you'll Go Smith!

Ask your dealer for an "on the job" demonstration.
(Write us for complete information and the name of your nearest dealer.)

SMITH AIR COMPRESSORS

GORDON SMITH & COMPANY, INC., Bowling Green, Ky.

For more facts, use Request Card at page 18 and circle No. 418

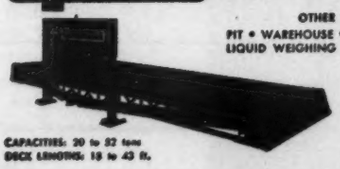
MOVES with the JOB! NO CONCRETE PITS!



THURMAN **Portable Truck Scale**

OTHER THURMAN SCALES:
PIT • WAREHOUSE • INDUSTRIAL • WHEELBARROW
LIQUID WEIGHING • BATCHING • AUTOMATIC

Sets up in minutes . . . accurate, precision weighing *on-the-site*. Complete steel deck construction. Low original cost . . . no maintenance costs. Can be installed as a pitless scale. Saves pit costs. WRITE OR WIRE FOR BULLETIN 601



CAPACITIES: 20 to 52 tons
DECK LENGTHS: 18 to 43 ft.

Precision Scales THURMAN *Since 1918*

THURMAN SCALE COMPANY, 1939 REFUGEE ROAD
DEPT. CE-2, COLUMBUS, OHIO

For more facts, use Request Card at page 18 and circle No. 419

SELECT CONCRETE SHORING for Job-Efficiency and PROFIT...



If you're looking for cost-cutting construction methods, and who isn't these days . . . A. S. Horner Construction Co. of Denver has first-hand knowledge that SHORING and SAVINGS are synonymous terms when ADVANCE tubular steel Scaffold is on-the-job. Prior to undertaking construction of a new vehicular bridge at Fort Morgan, Colorado, Horner compared various methods for concrete shoring . . . then selected ADVANCE to do the job. Among other things, they found that the ADVANCE Shoring System combines maximum stability and leg-load capacity with the easiest, fastest assembly possible. All components of ADVANCE Scaffold (panels, braces and accessories) have self-contained locking mechanisms that speed scaffold assembly without tools, eliminate the expense of replacing lost parts. Result? Horner had the safest, most positive and least costly shoring system yet devised.

Horner's favorable experience with ADVANCE Shoring Scaffold has long been standard procedure with hundreds of satisfied contractor-users throughout the nation. By matching the right equipment to the job, they cut construction costs . . . stabilize their profit picture. You can too!

Your BEAVER-ADVANCE distributor has a large warehouse stock of both Standard and Heavy-Duty ADVANCE tubular scaffold for sale and rental. Contact him for full details on its use for concrete shoring, masonry, painting and all other building construction and renovation work. Scaffold engineering plans and estimates are gladly furnished without cost or obligation.

BEAVER ADVANCE

BEAVER-ADVANCE CORPORATION

ELLWOOD CITY, PENNSYLVANIA

QUALITY VALUE SERVICE

CLIP AND MAIL THIS COUPON FOR FREE DESCRIPTIVE LITERATURE

CHECK LITERATURE ITEMS DESIRED

- ☐ Bul. 62.....General Catalog
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- ☐ Bul. 69.....Building with ADVANCE Scaffold
- ☐ Bul. 72.....Concrete Hoisting Equipment
- ☐ Bul. 73.....10M Heavy-Duty Scaffold

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

For more facts, use coupon or Request Card at page 18 and circle No. 420



For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.

All-hydraulic rear-dump motor wagon is highly maneuverable, hauls 12 tons heaped



Allis-Chalmers has added the new all-hydraulic TR-160 rear-dump motor wagon to its construction-machinery line. The new unit has a carrying capacity of 12 tons—7.7 cubic yards struck, and 12 cubic yards heaped.

Power is supplied by a 6-cylinder Allis-Chalmers supercharged diesel engine rated at 155 horsepower at 2,200 rpm. A 5-speed constant-mesh transmission provides forward speeds from 3 to 25.4 mph, and reverse at 3 mph.

The 7-foot 11-inch-wide unit is highly maneuverable and can make a nonstop 180-degree turn in 22 feet 8 inches with a one-sixth turn of the steering wheel.

The wagon body's 7-foot loading height lends itself to smaller crawler and rubber-tire tractor-shovel loading.

Two double-acting hydraulic jacks provide dumping power to a maximum angle of 52 degrees.

According to the manufacturer, the rear-dump wagon is quickly interchangeable with the S-160 7-cubic-yard scraper.

For further information write to the Allis-Chalmers Mfg. Co., Construction Machinery Division, Dept. C&E, P. O. Box 512, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 33.

100-hp loader added to crawler-tractor line; features include 10-ton bucket capacity

Latest addition to the Eimco 100-hp 103 Series of crawler tractors is the Model 123 front-end loader.

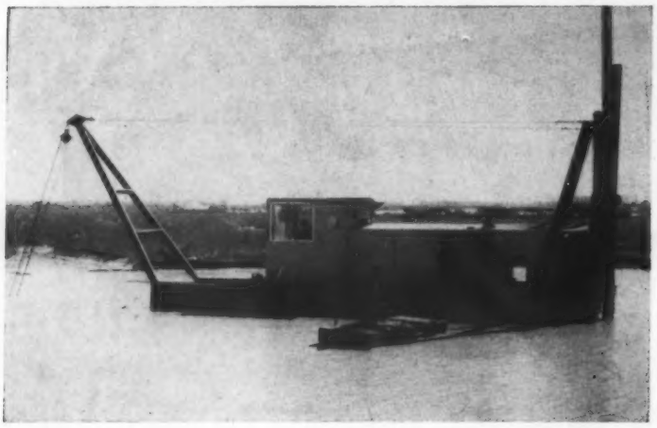
This machine has a bucket capacity of 20,000 pounds at carry position and a maximum breakout force, with the bucket heeled on the ground, of 25,000 pounds. The sand and gravel bucket capacity has an SAE rating of 2¼ cubic yards; the rock bucket has a 2-cubic-yard capacity (2¼ yards heaped).

The Eimco 123 features loader arms, main frame, final drive, and center housing of steel cast by unitized construction, with no bolts or welds.

A single stick controls all actions of the arms and bucket. As in all Eimco 103 tractors, power is transmitted through Unidrive transmission and Quadra-Torque, giving four speeds both in forward and reverse, with a speed range from 0 to 6½ mph.

For further information write to The Eimco Corp., Dept. C&E, P. O. Box 300, Salt Lake City, Utah, or use the Request Card at page 18. Circle No. 27.





Portable dredges with a wide variety of uses are available from the American Marine & Machinery Co. Named Hydra-Drive, these units come in models that can dig to depths of 50 feet and pump 1,000 cubic yards per hour at distances to 7,000 feet. The manufacturer points out that with these dredges material is handled only once and requires no additional compaction to meet with FHA specifications. The dredges are easily disassembled for hauling over the highway. For further information write to the **American Marine & Machinery Co.**, Dept. C&E, P. O. Box 1150, Nashville, Tenn., or use the Request Card at page 18. Circle No. 90.

FOR FAST, SAFE, CONCRETE FORMING

Pick **SURE-GRIP ACCESSORIES**

From one source . . . every accessory you need for accurate, safe and dependable concrete forming. They're made to save time . . . reduce your forming costs.

Dayton Sure-Grip accessories are preferred by leading contractors and engineers. National network of distributors assures prompt service — anywhere!



DAYTON SURE-GRIP HAS A COMPLETE LINE OF ACCESSORIES FOR EVERY CONCRETE FORMING REQUIREMENT

Our detailing department will gladly help plan your forming requirements and layouts.

Years of experience is your assurance of competent, cost saving recommendation.

Write for your free copy of our new catalog

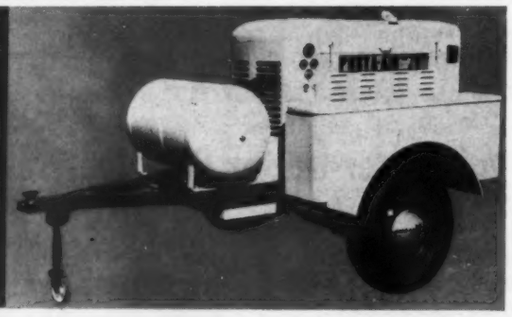
THE DAYTON SURE-GRIP & SHORE COMPANY

111 KERCHER ST., MIAMISBURG, OHIO

For more facts, use Request Card at page 18 and circle No. 421

HANDLE JOBS FASTER with GENERAL SUPPLY'S

Porta-Air 75 COMPRESSOR



Proved in Action From Coast to Coast!

Operates 80-lb. paving breaker, or 45-lb. rock drill, or 3 tampers, or 2 clay spades, or 3/16" sand nozzle!

★ Powerful Chrysler Industrial Engine.
★ Beryllium, Heat-Treated Compressor Valves.
★ All controls conveniently grouped.
★ Working parts readily accessible for fast preventive maintenance.

Optional Fenders and Toolboxes 51" x 17" x 12"

Mr. Contractor or Engineer: Porta-Air is lightweight, easy to maneuver, ideal for high speed towing. Economical too! Uses only 1½ gallons of gasoline per hour. Parts and service are available at dealers throughout the country. Place your order now!

WIRE OR CALL COLLECT TO

Industrial Compressor Division
1920 McGee Trafficway, Kansas City, Missouri
Phone: Harrison 1-5477
TWX: KC-255

1820 "D" Street, Sacramento, California
Phone: Gilbert 3-5928
TWX: SC-65

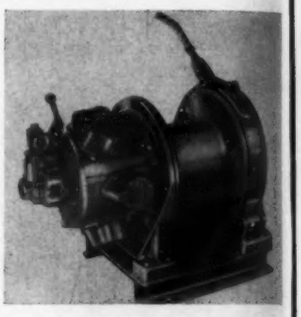
GENERAL SUPPLY CO.

For more facts, use coupon or Request Card at page 18 and circle No. 422

Two new utility hoists rated at 2½, 3½ tons

Two air-powered utility hoists capable of handling maximum loads of 5,000 and 7,000 pounds are announced by Ingersoll-Rand.

Designated Models **K6U** and **K6UA** single-drum utility hoists, the units are designed to handle the heavier loads on erection, maintenance, and material-handling jobs, without multiple reeving. Both hoists are equipped with reversible 6-cylinder air motors with infinite speed graduation provided by the throttles. A self-energizing brake supplements the reversible motor for positive control.



At 80-psi air pressure, the K6U has a rated capacity of 7,000 pounds with average lift speed of 65 fpm. The K6UA is rated at 5,000 pounds and 95 fpm. Drum capacity of the two units is 600 feet of ⅝-inch wire rope or 400 feet of ¾-inch wire rope. Controls for completely remote operation of these hoists are optional.

For further information write to the Ingersoll-Rand Co., Dept. C&E, 11 Broadway, New York 4, N. Y., or use the Request Card at page 18. Circle No. 158.

Grader-applicator is versatile machine

The new utility grader-applicator available from the Hester Plow Co. can be used with any tractor with a 3-point lift. It is adjustable to spread material such as lime rock or dolomite, from zero up to 2½ inches.

With special attachments, it is said to be ideal for spreading slurry seal, a dressing for sound but cracked streets and roads.

For further information write to the Hester Plow Co., Dept. C&E, 1721 Egner St., Jacksonville 6, Fla., or use the card at page 18. Circle No. 67.

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ENGINEER



The Master 10 travels at speeds up to 10 mph and can maneuver easily in heavy traffic and congested areas.

Self-propelled striper measures 50 inches wide

A highly maneuverable, self-propelled, one-man-operated striping machine, the Master 10, is offered by the M-B Corp.

A key feature is the machine width, which is only 50 inches over all so that traffic is not blocked.

The Master 10 lays one, two, or three lines 3 to 6 inches wide, in one or two colors. Lines may be painted solidly or intermittently with a skip-line attachment for automatic gun control.

Fast operation is assured with 3 speeds forward, up to 10 mph, plus reverse. Automotive-type steering on the two front wheels enables precision marking for new stripes and exact retracing of old lines.

Power is supplied by a 21½-hp engine.

The Master 10 carries two 60-gallon paint tanks or one 120-gallon tank.

For further information write to the M-B Corp., Dept. C&E, 1635 Wisconsin Ave., New Holstein, Wis., or use the Request Card at page 18. Circle No. 154.

Announce new flux for brazing, welding

A new Liquiflux for brazing and welding is offered by Rexarc, Inc.

According to the company, cast-iron Liquiflux enables continuous brazing operations without the necessity of painting the metal with powdered flux, and without dipping the welding rod into powdered flux.

The new Rexarc flux is in the flame automatically, and no special torch is needed. It is recommended primarily to facilitate the brazing of brass to cast iron, and cast iron to steel with brass. It is a solvent for the oxides on most cast irons, and it greatly facilitates the flow of chrome alloys, and chrome, cobalt, and tungsten alloys applied to steel or cast iron.

For further information write to Rexarc, Inc., Dept. C&E, 38 E. Third St., West Alexandria, Ohio, or use the card at page 18. Circle No. 92.



Designed with an exceptionally large ratio of discharge opening to charging area, this is the first Blaw-Knox radio-controlled concrete bucket scheduled for construction operations. It is one of three 8-cubic-yard buckets to be employed by Red River Builders, a joint venture, in construction of the Greers Ferry Dam in Arkansas. Featuring two roller-type discharge gates synchronized by gears, the opening is 44.3 per cent of the charging area. Each discharge opening measures 4 feet × 2 feet 11 inches for a total of 23.3 square feet. The charging area measures approximately 7 feet 10 inches × 6 feet 10 inches—a total of 52.6 square feet. The self-powered hydraulic units are designed for rugged cableway use. They are equipped with an automatic latch for engaging a cableway sling, and for manual operation. For further information write to the **Blaw-Knox Co.**, Dept. C&E, 300 Sixth Ave., Pittsburgh, Pa., or use the card at page 18. Circle No. 161.

15,000 Patterns

ON HAND FOR GRAY AND DUCTILE IRON

Construction Castings

WITH LARGE STOCKS MAINTAINED FOR PROMPT SHIPMENT ANYWHERE



Send for free 168-page catalog.

NEENAH FOUNDRY COMPANY

Neenah, Wisconsin

Chicago Office: 5445 North Neva Avenue, Chicago 31, Illinois

For more facts, use Request Card at page 18 and circle No. 423

Here's where to get your best buys in used equipment!

BONDED BUY



Spence Long, Used Equipment Manager, Hoover Equipment Company, Caterpillar Dealer in Oklahoma City.

"This is a section of our used equipment lot—one of over 300 Caterpillar Dealers' lots in the U. S. Right here, as in any of the others, you can find the used machine you want for the purpose you want at a fair, realistic price. What's more, you don't buy 'blind.' We recondition, classify, label and *guarantee* our trade-ins. *We* know what you're buying . . . *you* know what you're buying.

"To help you get what you want, we classify most all of our used equipment into three types of *protected* buys, one of which should be right for your needs. Here they are:

1 A 'BONDED BUY' Cat-built machine, with a warranted value up to $10,000—it guarantees satisfactory equipment performance and supplies free of charge *all* parts and labor on the machine during the guarantee period.

2 A 'CERTIFIED BUY'—a written guarantee covering units of any make in very good condition.

3 A 'BUY AND TRY' deal—a written money-back agreement on certain machines not in the above two classifications.

"Regardless of the type or kind of equipment you buy, we want it to earn money and pay off for you with satisfactory performance. We back every machine with prompt service and parts you can trust. Believe me, all Caterpillar Dealers do. Every Caterpillar Dealer offers the best buys in used equipment. You'll find him listed in the Yellow Pages!"

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U.S.A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BEST USED EQUIPMENT BUYS ANYWHERE

For more facts, use Request Card at page 18 and circle No. 424

Big 29-yard scraper driven by 430-hp engine

With the introduction of a new 430-hp V-12 diesel engine as standard equipment, the LeTourneau-Westinghouse Model B Tournapull becomes a big 29-yard companion to the company's V-Power C.

The 28 per cent increase in horsepower in the V-Power B cuts acceleration time by nearly a third as the machine comes out of the cut and gets up to haul speed, states the company.

In addition to numerous mechanical and electrical improvements, the capacity of the B Fullpak scraper has been increased from 21 to 23 cubic yards (29 yards heaped).

Teamed with the new power plant is a Fuller L-1550 transmission with a special LeTourneau-Westinghouse high-low range box. The combination give 10 speeds forward and 2 speeds in reverse. The close-spaced ratios of the forward speeds permit the operator to select exactly the power and speed he wants under any condition, and to skip-shift up or down any time.

For further information write to the LeTourneau-Westinghouse Co., Dept. C&E, 2301 N.E. Adams St., Peoria, Ill., or use the Request Card at page 18. Circle No. 74.



On the V-Power B Tournapull, improvements include a 430-hp engine, increase in capacity to 29 yards, bigger final-drive gear, larger radiator, and automatic dual-speed steering.

GALION® 12-Ton Pneumatic-Tire Roller

NEW NEW NEW NEW NEW



2239

Only Galion offers EQUA-MATIC front end construction

Through the automatic balancing action of three king pins, safe roller support is always assured when working over uneven or sloping ground. Galion's exclusive EQUA-MATIC design provides an equalizing movement straight up and down of all five steering wheels, and an oscillating up and down movement of the end wheel pairs. Thus, firm compacting contact is maintained with the surface at all times by the five wheels.

plus 18 other important features

- ROLL-O-MATIC or standard gear shift drive.
- SYNCHRO-MESH transmission.
- UNITIZED assembly provides easy access and servicing.
- AUTOMOTIVE-type hydraulic steering.
- LARGEST ballastable capacity in relation to overall size—in excess of 24,000 lbs. total weight with wet sand ballast.
- EIGHTY horsepower gasoline engine.
- HEAVIEST construction—9,200 lbs. metal weight.
- LOW center of gravity.
- 100% COVERAGE—treads of the nine tires overlap.
- WIDE RANGE of speeds—same range forward and reverse.
- SHORT drive shaft.
- DOUBLE drive chains to each pair of drive wheels.
- FOUR-WHEEL hydraulic service brake and independent parking brake.
- EXCELLENT visibility for operator.
- SHORT turning radius.
- FOUR large doors for ballast removal.
- SWIVEL seat, fully adjustable.



GREATER STABILITY

Maximum stability and support across the entire front end of the roller is achieved by GALION'S three-point king pin suspension of the five steering wheels. PATENT PENDING.



SYNCHRONIZED 5-WHEEL STEERING

Each of the five steering wheels is adjusted to always steer in its own true arc. This design eliminates the pushing and gouging of material which results when no provision is made to compensate for arcing variations in multiple-wheel steering.



EASY SERVICING

Unitized assembly permits each wheel and wheel brake to be serviced individually, as well as the oil-tight double drive chains. The entire power train can be removed as a unit.

Write for literature.

THE GALION IRON WORKS & MFG. CO.
General and Export Offices—Galion, Ohio, U.S.A.
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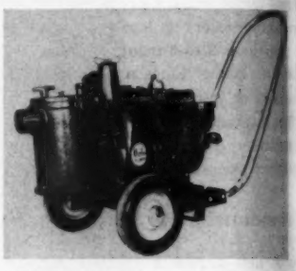


MOTOR GRADERS & ROLLERS

For more facts, use Request Card at page 18 and circle No. 425

General-service pump delivers 7,800 gph

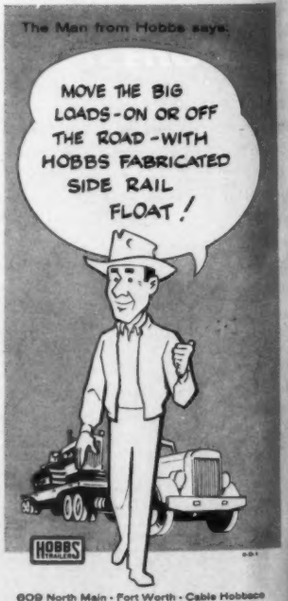
Marlow Pumps, a division of the Bell & Gossett Co., announces the Model 2AA1-B general-service pump.



This self-priming unit has 2-inch male threaded suction and discharge connections and a 3-position discharge.

Powered by a Briggs & Stratton engine, this pump will deliver 7,800 gph.

For further information write to Marlow Pumps, a division of Bell & Gossett Co., Dept. C&E, P. O. Box 200, Midland Park, N. J., or use the Request Card that is bound in at page 18. Circle No. 165.



609 North Main · Fort Worth · Cable Hobbsco

For more facts, circle No. 426



Fully extended, the boom has a reach of 35 feet. The Hydrocrane has a lifting capacity of 5 tons.

Crane-excavator boom is 3-piece, hydraulic

A 3-piece hydraulically telescoped high-lift boom is now available as standard equipment on the Bucyrus-Erie Model H-3 (Series Two) Hydrocrane truck-mounted, all-hydraulic crane-excavator.

According to the manufacturer, the boom is fabricated of alloy steel for greater strength with less weight. Fully extended, the boom is 35 feet long. For extra-high crane work, 10 and 20-foot jibs are available.

A simple pin arrangement for locking the tip section in position permits long or short boom setups in a matter of minutes. For work inside buildings or in cramped quarters, the upper and intermediate sections telescope into the lower section to form a boom only 15 feet 9 inches long. The short boom rests over the cab for road travel.

The H-3 Hydrocrane has a 5-ton lifting capacity.

For further information write to the Bucyrus-Erie Co., Dept. C&E, South Milwaukee, Wis., or use the Request Card at page 18. Circle No. 96.

Two new stud drivers in powder-actuated line

A new line of powder-actuated hand tools, for anchoring of wood or metal to concrete or steel, is announced by the Nelson Stud Driver Division of Gregory Industries, Inc.

The alloy-steel drive studs range in length from 1 to 6 inches, and they may be threaded or headed. Eye-pins for concrete are also available.

Two new stud drivers are offered. The Model 660, which weighs less than 6¾ pounds and is 14 inches long, uses only ¼-inch drive studs. Its powder charge is .25 caliber. It automatically ejects spent cartridge cases.

The Model 600 uses interchangeable ¼-inch and ⅜-inch barrels, with either .22 or .25-caliber powder charges. It has a removable breech plug instead of the automatic cartridge ejector.

For further information write to the Nelson Stud Driver Division, Gregory Industries, Inc., Dept. C&E, 28th St. and Toledo Ave., Lorain, Ohio, or use the Request Card at page 18. Circle No. 87.

JOINT AND CRACK PROBLEMS?
IN CEMENT & BITUMINOUS CONCRETE

THE WINDSOR ROUTER

In use from coast to coast



LOW ORIGINAL COST • LOW OPERATING COST
HIGHWAYS • BRIDGES • AIRPORTS • FLOORS
INDUSTRIAL • COMMERCIAL • WHOLESALE
SWIMMING POOLS • CONCRETE STRUCTURES

DEALER INQUIRIES INVITED

WINDSOR MACHINERY CORP. 3311 Berlin Turnpike, Newington 11, Conn.

For more facts, use Request Card at page 18 and circle No. 427



Pounded over 200 times by air hammer . . . still not cut!

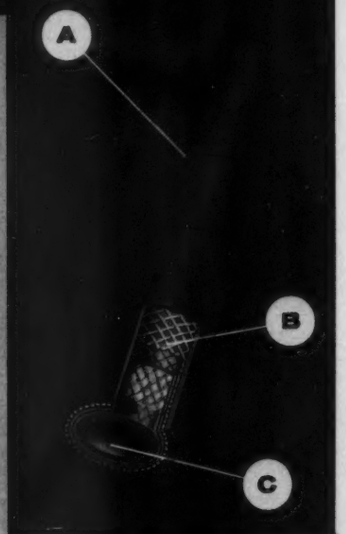
Even after steady pounding with an air hammer, which delivered 80 pounds of pressure to the chisel edge, Gold Seal air hose was still intact! Think of how much you will save on costly replacements should your operator accidentally hammer Gold Seal for a few seconds . . . or a trucker dump a load of rock on it . . . or a tractor grinds over it.

A. COVER: Extremely tough, resilient rubber; resists abrasion, cutting and gouging.

B. CARCASS: Braided steel wire for maximum strength and resistance to extreme impacts. Single braid of nylon cord to insure maximum bonding of cover to carcass.

C. TUBE: Synthetic compound to insure maximum oil resistance. Won't soften or flake.

Write Dept. E. for more information.



Acme Hamilton

MANUFACTURING CORPORATION, TRENTON 3, N. J.

Divisions: Acme Rubber Mfg. Co. • Hamilton Rubber Mfg. Corp.

ATLANTA • CHICAGO • DETROIT • HOUSTON • INDIANAPOLIS • LOS ANGELES
MILWAUKEE • NEW YORK • PITTSBURGH • SALT LAKE CITY • SAN FRANCISCO • SEATTLE

For more facts, use Request Card at page 18 and circle No. 428

Tractor shovel features short turning radius

A new heavy-duty, rubber-tire tractor shovel with short turning radius, designed principally for bulk-material handling, is announced by the Construction Machinery Division of the Clark Equipment Co.

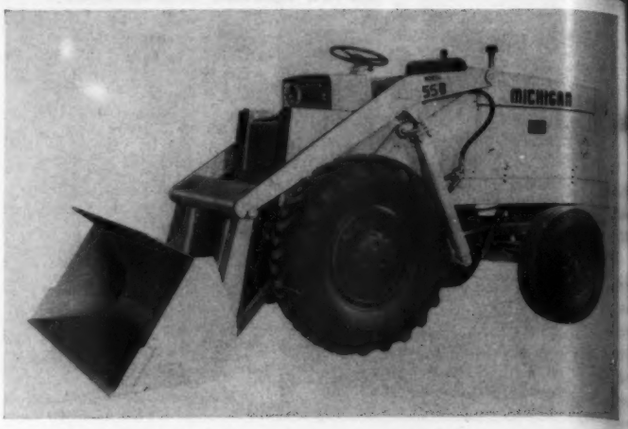
The unit is designated Michigan Model 55B, and it has a lift capacity of 5,400 pounds. Equipped with a 1-yard bucket, the 15-foot 8-inch-long machine has a turning radius of only 11 feet 2 inches.

Capable of traveling at speeds up to 26 mph in either forward or reverse, the Model 55B is powered by a 66.5-hp gasoline engine. It has bucket wheel drive with planetary gear reduction in the driving wheels.

The Michigan power train with torque converter and power shift is standard.

The new model has a total working weight of 10,200 pounds. Maximum dumping height is 8 feet.

For further information write to the Construction Machinery Division, Clark Equipment Division, Dept. C&E, P. O. Box 599, Benton Harbor, Mich., or use the Request Card at page 18. Circle No. 133.



An 11-foot 2-inch turning radius is a major feature of the Michigan Model 55B.

HYDRAULIC SLIPFORM SERVICE



B. M. HEEDE, INC. 30-01 37th Ave., Long Island City 1, N. Y.
In San Francisco: 630 Sixth St. In Montreal, Can.: 625 Faillon St.

For more facts, use Request Card at page 18 and circle No. 429

Hydraulic hand pump is small but powerful

A small, compact hydraulic hand pump that develops a full 8,650 psi is announced by the Owatonna Tool Co.

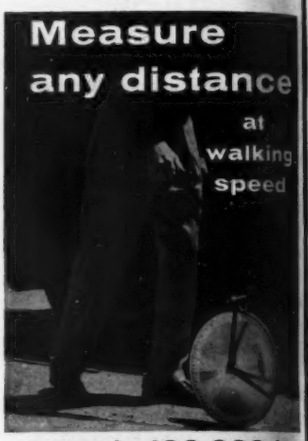
The new pump is 14 5/16 inches



long and has an oil capacity of 13.5 cubic inches. It is said to provide fast and efficient operation for the 2 and 4-ton-capacity single-cylinder rams recently added to the OTC line.

For further information write to the Owatonna Tool Co., Dept. C&E, 381 Cedar St., Owatonna, Minn., or use the Request Card at page 18. Circle No. 152.

Measure any distance at walking speed



records 100,000 ft. *automatically!*

It's So Easy to measure with a Rolatape . . . and you save time on every estimating job . . . no tapes to wind, no helper is required. You get precision-accurate measurements every time.

Records Feet automatically and the accumulated total is always in full view.

Shows Inches, and Fractions of an inch. Wheel is calibrated in inches and fractions for quick easy reading.

Shows Tenths of a foot. Wheel is calibrated in tenths on reverse side for engineers.

See your engineering and surveying instrument dealer or write for complete information today!

Rolatape, Inc., 1741 14th St., Santa Monica 2, California

There is a variety of Rolatape Models to suit your needs. See them at your local dealers.



Rolatape Measuring Wheels

For more facts, circle No. 431

WORLD'S LEADING . . .



HIGH PRODUCTION

LOW INITIAL COST

COMPLETE VERSATILITY

PORTABILITY IS

NO SIDE LINE

WITH US!

Ross . . . Leading manufacturer of portable batching equipment has produced the perfect team for successful concrete batching. The versatile pair is the Ross 6 yd. Batching Plant and the 350-B bbl. Cement Silo. Designed for high production at low initial cost, the team has proven itself the leading portable batch plant the world over.

CONTACT US FOR THE NAME OF THE DEALER NEAREST YOU

ROSS PORTA-PLANT

BOX 446 PHONE MI 3-4356 BROWNWOOD, TEXAS

For more facts, use Request Card at page 18 and circle No. 430

Available with single-axle and tandem suspensions, Fruehauf's open curved-side unit can carry 10 to 30-cubic-yard loads.



Bulk-material haulers in several body designs

A wide range of body designs, materials, and dump-gate options are offered in the new Fruehauf bottom-dump trailers.

Available in steel, aluminum, or stainless steel, the basic body designs are the curved-side style (open or closed), specially built for highway use where light weight is an essential factor; and the vertical-side hopper designed to haul maximum loads to remote off-highway sites.

In both open and closed curved-side models, the hopper walls serve as part of the load-carrying structure as well as the sides of the cargo space, providing a minimum of body weight to payload ratio. However, in the closed unit, the side walls are continued over the top, and loading is accomplished through three 20-inch hatches. With this watertight construction, the unit is reported to have a 22-cubic-yard capacity.

The open-top model, available with single-axle and tandem suspensions, can carry loads of 10 to 30 cubic yards.

Fruehauf reports that the other basic body design, the vertical-side bottom hopper, is heavier than the curved-side unit. It has a flat panel construction and an unlimited payload potential.

A wide variety of dumping gates is available.

For further information write to the Fruehauf Trailer Co., Dept. C&E, 10928 Harper Ave., Detroit 32, Mich., or use the Request Card at page 18. Circle No. 3.

Double-flange screed has amplitude dial control

The Stow Mfg. Co. has available a single-beam double-flange vibrating screed said to be ideal for striking off narrow slabs such as sidewalks and prestressed-concrete beams.

This new screed consists of a vibrating unit driven by a 1-hp electric motor or 3-hp gasoline engine, which transmits the vibration evenly to two 3-inch-wide steel screeding flanges. The first flange strikes off the concrete; the second removes any air bubbles, leaving a completely smooth surface.

The amplitude of vibration can be adjusted by dial control to suit the particular job, and the vibration propels the screed along while the operators guide it.

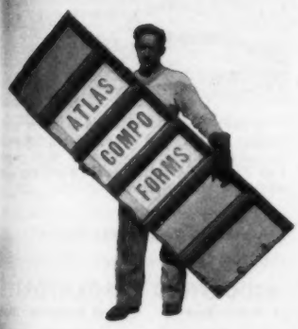
This lightweight unit is available in lengths from 4 to 12 feet.

For further information write to the Stow Mfg Co., Dept. C&E, 40 Shear St., Binghamton, N. Y., or use the Request Card at page 18. Circle No. 39.



The first flange strikes off the concrete, and the second removes any air bubbles, leaving a smooth surface.

New atlas COMPO FORMS



More Money-Saving Features Than Any Other Concrete Form

Learn why these lighter, stronger, more accurate forms can be erected and stripped with maximum speed and economy.

New Atlas Compo Forms will save time and money on practically any concrete structure—square, round or other—low or high.

Write for new descriptive folder CE-60.

IRVINGTON FORM & TANK CORPORATION
100 William Street
New York 38, N. Y.
HAnover 2-2285
For more facts, circle No. 432

Marion rock bodies are BUILT TO TAKE IT!

Fleet of Marions On The Job Regularly Since 1954 Provide Top Payload Performance With Minimum Downtime At Indiana Quarry

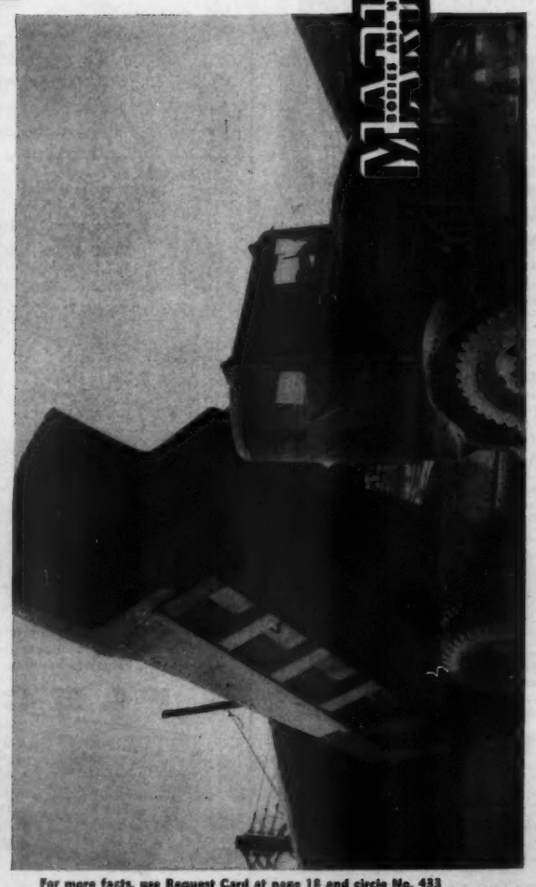
Seven Marions—two in service since 1948 and five since 1954—have been giving their owners top payload performance with minimum downtime.

Each unit hauls about 280 tons per day in 35 trips from the quarry to the crusher. The bodies are RB-50s, 5 cubic yards, with sideboards. The double arm underbody hoists are HD-8s.

Other Marion equipment in use at this ultra-modern quarry includes 5 trailer dumps, 5 tandem axle and 5 single axle units. The owners also use Marion equipment exclusively at their other two operations—a quarry and a coal mine.

If you want more information about how rugged Marion rock bodies and heavy duty hoists can help your quarry operation, write direct or see your Marion Distributor.

MARION METAL PRODUCTS CO.
Marion, Ohio, U.S.A.



For more facts, use Request Card at page 18 and circle No. 433

The Allis-Chalmers Model TL-12 4-wheel-drive front-end loader, with a carrying capacity of 4,000 pounds, has a 4-speed transmission.



More capacity, speed in new front-end loader

Allis-Chalmers announces a new TL-12 front-end wheel loader with increased capacity and speed. This 4-wheel-drive loader has a carrying capacity of 4,000 pounds and a static lifting capacity of 9,500 pounds.

The TL-12 has the power-reversing Tractomatic transmission, with a lever on the steering column to control both forward and reverse movement without stopping the machine to clutch and shift gears. This lever hydraulically engages the two multiple-disk, dry-type clutches—one for forward travel and the other for reverse.

Four speeds forward are provided to 21.2 mph, and four reverse speeds to 27.9 mph. Reverse speeds are approximately 30 per cent faster than the forward speeds in the same gear. The company points out that this design permits a faster loading cycle without shifting to a higher gear.

The transmission also has an automatic clutch cutoff that disengages the clutch when the brakes are applied. It has the effect of placing the transmission in neutral, thereby diverting full engine power to the hydraulic system for faster loading and dumping. As an added safety factor for work on downgrade or when dozing over banks, the clutch cutoff can be disconnected by flipping a lever in the operator's compartment.

The TL-12 is available with either Allis-Chalmers 77-hp gasoline or 76.5-hp diesel engines.

Four buckets are available for the unit, ranging from 1 to 2-cubic-yard capacities. Bucket tip-back at carrying height is 47 degrees, and there is up to 14,500 pounds of breakout force at the cutting edge.

Maximum dumping clearance under the cutting edge is 8 feet 4 inches; under the hinge pin, 10 feet 3 inches. At maximum dumping height, reach from the front of the tires to the cutting edge is 2 feet 8½ inches. Turning radius of the TL-12 is feet 5 inches with the bucket in carry position.

Power steering and 4-wheel hydraulic power-boosted brakes are standard equipment.

Available attachments include backhoe, crane hook, backfiller blade and bucket teeth.

For further information write the Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card that is bound in at page 18 of this issue. Circle No. 138.

Offer large loop rods for heavy-duty use

Jos. Dyson & Sons, Inc., has available a complete line of large loop rods for many types of construction.

Dyson single loop rods are said to be ideally suited for numerous building applications such as anchoring cable, for use with anchors for large guy lines, in bridge work, and in power plants. Where freedom of movement is desired in supporting the load, the firm's coupled loop rods are recommended.

The rods are available in regular, high-tensile, and stainless steel. Bolt diameters are 1¾ through 8 inches, and lengths are up to 50 feet.

For further information write to Jos. Dyson & Sons, Inc., Dept. LR, Dept. C&E, 5125 St. Clair Ave., Cleveland 3, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 116.

NU AERO SPECIAL OFFER!
FREE 50' TAPE



NU AERO SPRAY LUBE For all GEARS not running in oil. Easy application of heavy-duty long lasting E. P. Lubricant. Eliminates gear wear, protects your machinery. No waste, no mess. 1 Doz. 16 oz. cans $18.90 per case

NU AERO CHAIN AND CABLE LUBRICANT (Heavy Duty)—Gives increased life to all chain drives and wire ropes. Penetrates, lubricates and protects from rust. Contains graphite and additives to give long-term lubrication after oil has dried out.
1 Doz. 16 oz. cans — $18.90 case

NU AERO PENETRATING OIL—loosens tightest parts — cuts rust, dirt, paint, grease etc. High pressure stream for hard to reach spots. Only NU AERO is effective on hot surfaces.
1 Doz. 11 oz. cans — $12.96 case

NU AERO STARTING ETHER — Gives quick, safe starts on all engines in cold or damp weather or after overhauling. No warm up needed. Works to 60° F. below zero.
1 Doz. 12 oz. cans — $12.60 case

With every order of 2 cases of these NU AERO quality products a FREE 50' STEEL ROE TAPE (Value $3.95) Flexible steel tape with red & black markings on white for quick reading.

QUALITY PRODUCTS FOR PROFESSIONALS
PRESSURE PRODUCTS CO. West Chester, Pa.
GENTLEMEN: PLEASE RUSH THE FOLLOWING NU AERO PRODUCTS:
____CASES SPRAY-LUBE @ $18.90 EACH
____CASES PENETRATING OIL @ $12.96 EACH
____CASES CHAIN OIL @ $18.90 EACH
____CASES STARTING ETHER @ $12.60 EACH
I will receive a free Roe steel tape with order.
Name .....
Address .....
City ..... Zone ..... State .....

For more facts, use coupon or circle No. 434

Attention:
"MR. ROAD BUILDER"
At last a new device for speed shifting your scraper without losing momentum — it's the
SPEED SHIFT CONTROL
FOR CATERPILLAR SCRAPERS
Built of highest quality materials to withstand your most rugged demands, this device has no adjustments and is easily installed in 30 minutes.



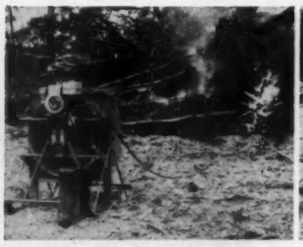
To shift from a low gear to a higher gear, depress clutch and while going through neutral merely push button in shift knob. This device eliminates double clutching and allows for instant shifting.
Accomplishment:
MORE YARDS PER DAY!!
A PRODUCT OF
BROOKFIELD LABORATORIES
21 Walnut Street North Brookfield, Mass.
For more facts, circle No. 435

FLECO® FACT FILE
How to burn brush faster, cleaner, cheaper!



A 24 inch fan directs up to 12,000 cubic feet of air a minute onto the fire, forcing fast, complete-burning.

Disposal of cleared brush is a costly, but very necessary operation. Anything you do to speed this task can keep money in your pocket. The new Fleco Fire Fan is designed for just that.



A pump throws fuel oil through a nozzle to any part of fire, at a rate of 10 to 12 gallons per hour, speeding combustion.



Even wet brush, trees and stumps are reduced to ashes. The Fleco Fire Fan weighs 210 lbs. and is easily moved from spot to spot.

FLECO®
Multi-Application, Rock, Root, Brush and Traxcavator Rakes • Root Plows • Cab Guards • Choppers • Pull and Detachable Stumpers • Fire Fans • Treedozers • Root Cutters • Tree Cutters • Undercutters

For more facts, see your Caterpillar-Fleco Dealer or write direct . . .

FLECO Corporation
P. O. Box 2370, Jacksonville, Florida, U.S.A.
Fleco International, Inc. • Fleco Overseas Limited
P. O. Box 820, Nassau N.P., Bahamas

For more facts, use Request Card at page 18 and circle No. 436



This portable crushing plant, the Diamond Model 70, has a capacity exceeding 175 cubic yards of material per hour passing a 1-inch screen based on 25 per cent oversize. Featured component units are a 10 × 36-inch jaw crusher; 32 × 24-inch star-gear roll crusher; 2½-deck, 4 × 12-foot vibrating screen; and 30-inch-wide belt conveyors throughout. Traveling weight of the plant is approximately 55,000 pounds. For further information write to the **Diamond Iron Works,** a division of the Goodman Mfg. Co., Dept. C&E, 4834 S. Halsted St., Chicago 9, Ill., or use the Request Card at page 18. Circle No. 169.

Powerful 36-inch trowel features 4-blade design

The Master Vibrator Co. announces a new, powerful 36-inch trowel for floating and finishing concrete slabs.

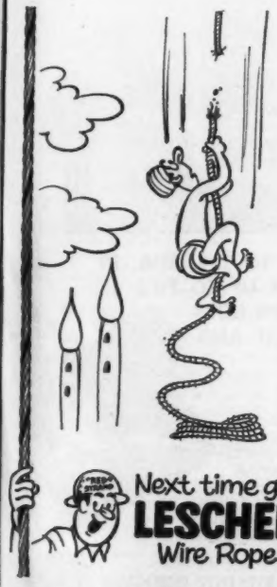
Called the Master 5-Horse, the unit has a 5-hp 4-cycle Briggs & Stratton engine that turns the blades from 45 to 110 rpm.

The trowel has four blades, and either 8-inch combination float-finish blades or 6-inch finish blades with 10-inch slip-on float shoes are available.

The 5-Horse weighs 120 pounds. A stationary guard ring overlaps the blades and permits the operator to work up to walls, into corners, and around pipes and columns, easily and safely.

Other features are a blade-adjustment knob on the handle, low-tension dead-man control, big fuel tank, and a lifting eye that facilitates transportation by crane between floors.

For further information write to the Master Vibrator Co., Dept. C&E, 1752 Stanley Ave., Dayton 1, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 163.



Next time get **LESCHEN** Wire Rope

LESCHEN WIRE PORTER ROPE DIVISION

H. K. PORTER COMPANY, INC.

For more facts, circle No. 437

GREENVILLE RIPPER FOR IH TD-15, 20, 25

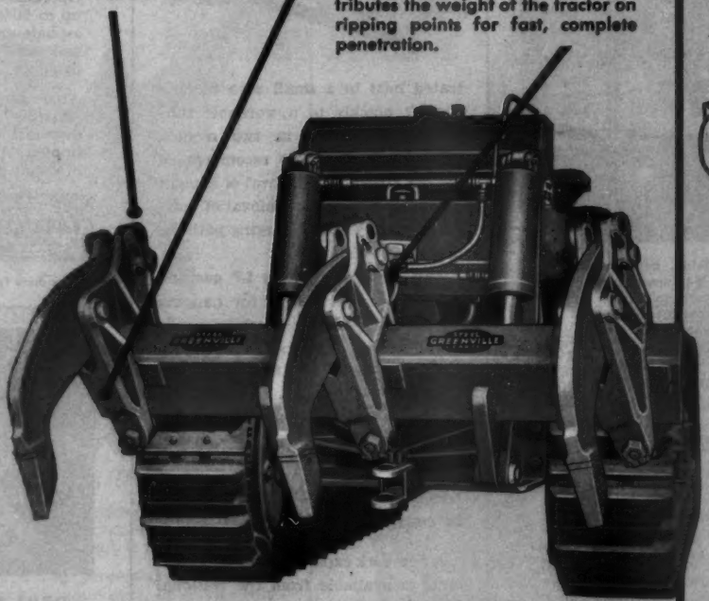
TURN TRACTOR INTO 4-WAY MACHINE

. . . rip . . . bulldoze . . . tow . . . pushload without changing tools

RIP AT ANY DEPTH . . . Pitch and depth control adjustments permit ripping at any depth. From basic settings, operator can adjust hydraulically as required. Settings can be made in seconds. Hydraulic system holds points at desired depth. Shank design and pitch control keep points at best ripping angle.

LIVE SWIVEL ACTION . . . Shanks smoothly swivel 15° in either direction on heavy pins — seek out weak spots in rock. It gives points a live action that shatters rock with a jackhammer action. Shanks follow tractor like a trailer.

FINGER-TIP HYDRAULIC CONTROL . . . Finger-tip control of the "power-matched" hydraulic system exerts Goliath-like power which distributes the weight of the tractor on ripping points for fast, complete penetration.



THE GREENVILLE TRAILING SWING BRACKETS work separately, each pivoting about a heavy pin to seek out weak spots in rock. The ripper weight balances dozer, resulting in greater traction and more usable horsepower.



BOOSTER RIPPING . . . A push block, straddling the center shank and swing boom can be attached very quickly by pinned connections. This permits use of the combined efforts of two tractors for added ripping power.



CURVED SHANKS are available in 24" maximum digging depth for TD-20 and 25. These shanks give their best performance in materials that are not blocky or slabby in formation.



STRAIGHT SHANKS are available in 24", 42" and 48" maximum digging lengths for TD-25 and all will adapt to the standard ripper without special attachments. Greenville's straight shanks give top performance in a wide range of materials. 18" penetration shanks are available for TD-15.



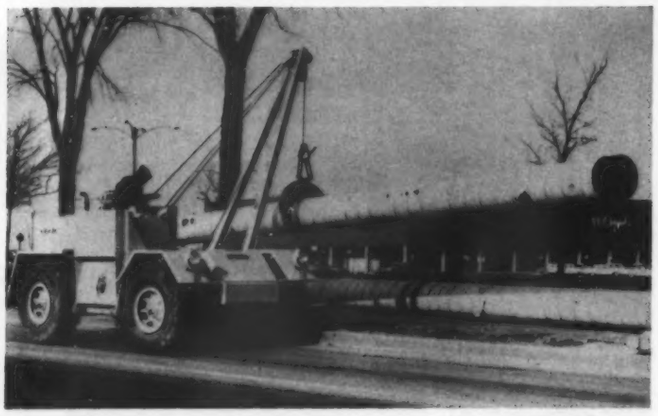
REPLACEABLE POINTS . . . For use with curved and straight shanks.

Tractor	Max. Ripping Depth W/Std. Shanks	Ground Clearance 24" Shank	Ground Clearance 18" Shank	Overall Width Tool Beam	Tool Beam Cross Sect.	Pump Data (Rear PTO)	Cyl. Dimensions Bore	Cyl. Dimensions Stroke	Pist. Rod Diam.
TD-25	24"	31"	—	108"	11" x 12⅛"	60 gpm @ 1000 psi	8"	15½"	3"
TD-20	24"	24"	—	102"	10" x 12"	44 gpm @ 1000 psi	6"	15"	2¼"
TD-15	18"	—	12"	90"	8" x 8"	37 gpm @ 1000 psi	5"	15"	2"

STEEL GREENVILLE CAR CO. EARTHMOVING EQUIPMENT

GREENVILLE
STEEL CAR COMPANY
Greenville, Pennsylvania

For more facts, use Request Card at page 18 and circle No. 438



The Blue Ox side boom has a lifting capacity of 17,500 pounds and travels at speeds from ½ to 47 mph.

Wheeled tractor has versatile side boom

A wheeled tractor designed for use in pipe stringing, lowering-in operations, oil and gas pipeline construction, and repair work is announced by the FWD Corp.

The Blue Ox side-boom unit features a low center of gravity for maximum stability under extreme boom loads. This, combined with the vehicle's hydraulically controlled counterweight and special 15-inch frame, gives the machine a capacity lift of 17,500 pounds.

Features of the new unit include 4-wheel drive for greater traction and 4-wheel steer, plus independent (or simultaneous) controlled right and left-hand brakes to allow the shortest possible turning radius. High flotation tires permit the Blue Ox to operate freely on city streets without damage to paved surfaces.

The unit can be moved quickly from job to job, without requiring a carrier, at speeds up to 47 mph. In addition, the Blue Ox provides a creep speed of ½ mph.

Optional equipment includes backfill blade, hydraulic axle stabilizers, and 16.00 × 20, 14-ply tires.

For further information write to the FWD Corp., Dept. C&E, Clintonville, Wis., or use the Request Card at page 18. Circle No. 4.

In Georgia, too...

HELTZEL

BATCH PLANTS TAILORED TO THE JOB



Savannah, Georgia: Heltzel 200-ton, five-compartment, portable combination bin with sealed cement compartment. Set of 7 cubic yard split batchers. 609 bbl. portable recirculating cement tank. 250 bbl. per hour cement elevator. Undertrack screw conveyor.

Heltzel custom-builds accurate, fast operating batch plants from a wide range of standard design units to fit your specific operation requirements. For example . . .

Heltzel unitized plants are factory assembled in two complete "packages"—batcher section and bin section. The batcher section is complete with batchers, scale equipment and all controls in place. All sections have snap-in connectors on all power connections. The entire plant goes together on the stack-up principle—is easy to assemble or move. These full-sized unitized, portable plants are available with self-contained transport wheels to provide added over-the-road mobility.

Write requesting bulletins covering the type of plant in which you are interested, or contact your nearby Heltzel distributor.

ASK FOR LITERATURE:
Ready-mix Plants
1-, 2-, 3- and 4-stop Plants
Combination Plants
Dry-batch Paving Plants
Unitized and Portable Plants



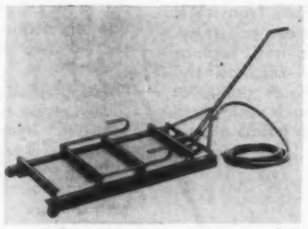
THE HELTZEL STEEL FORM & IRON CO.
WARREN, OHIO

For more facts, use Request Card at page 18 and circle No. 439

Asphalt surface heater is lightweight, portable

A new portable, lightweight asphalt surface heater, which can be operated by one man, has been announced by the Essick Mfg. Co.

According to the manufacturer, this heater produces highly concentrated heat in a small area to heat asphalt quickly to a workable consistency. Available in two models, this unit is especially recommended for the repair and removal of asphalt bumps and pushups, removal of traffic-lane lines, and for drying potholes prior to patching.



The heater is fired by LP gas and is equipped with hooks for hanging on the tail gate of a truck.

For further information write to the Essick Mfg. Co., Dept. C&E, 1950 S. Santa Fe Ave., Los Angeles 21, Calif., or use the Request Card at page 18. Circle No. 28.

Cork expansion joint is asphalt-impregnated

A new cork expansion joint for concrete is available from the National Expansion Joint Co.

Called Naco cork expansion joint, it will compress to one-half its thickness under a load of 50 psi. With release of the pressure, the joint will return to within 95 per cent of its original size, according to the manufacturer.

The cork is asphalt-impregnated and is encased within 15-pound felt. It is reported to weather well and to have superior handling qualities. Standard sizes are available.

For further information write to the National Expansion Joint Co., Dept. C&E, 1601 Embarcadero Road, Oakland, Calif., or use the Request Card at page 18. Circle No. 14.

GOOD ROADS "ODELL" SPREADER with automatic shut off gate!



...for asphalt and aggregate spreads up to 8-inch depths

Operated by only two men, contractors report savings up to 50% on average jobs with the "Odell". Spreads asphalt, gravel, coarse slag or stone, limestone, cinders, and other base material (up to 4" in diameter) to 8" in depth. Adjustable for spread widths up to 10 feet.

Accurate spread depth is controlled by the exclusive "floating" strike-off bar with new crown adjustment, mounted on runners independent of the roller and hopper. Automatic shut-off eliminates dribble and material pile-up at end of each pass.

Good Roads MACHINERY CORP. GOOD ROADS MACHINERY Corp
MINERVA, OHIO

For more facts, use Request Card at page 18 and circle No. 440



DRILL HOLES UP TO 1½" DIA. IN MASONRY—SAVE UP TO 70% WITH NEWEST LOW-COST TRUCO® HAND KIT AND FAMOUS TRUCO DIAMOND BITS



Handy little kit weighs only 17½ lbs. and easily saves its cost on your first job. Drills concrete (but not rods), brick, marble, terrazzo, all tiles like crazy; wonderful for anchor holes. Every maintenance crew needs one. Accessories available.

Write for Distributor's name and literature

TRUCO MASONRY DRILLING DIVISION
WHEEL TRUEING TOOL COMPANY
TRUCO 150-3200 W. Davison, Detroit 38, Mich.
573 Langlois, Windsor, Ont.
HALF-A-CENTURY OF INDUSTRIAL DIAMONDS

Write for New Catalog

For more facts, use Request Card at page 18 and Circle No. 441

Hoe for 2-ton trucks holds ⅜ yard struck

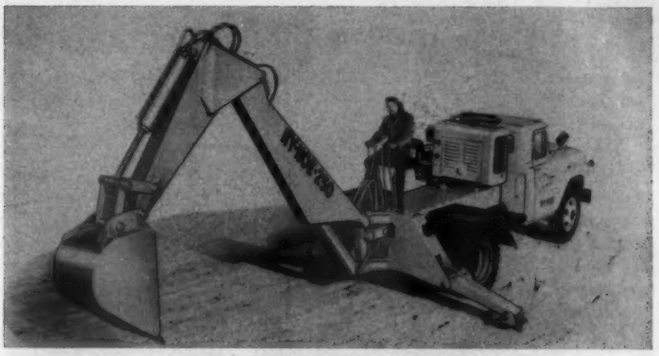
A truck-mounted hoe with a ⅜-yard struck capacity is announced by the Hydraulic Machinery Co.

Designated Hy-Hoe 250, the unit reportedly can handle heaped loads of ½ yard or more. It can be mounted on any new or used 2-ton truck to be ready for work.

This machine has a 200-degree boom swing, digs 14 feet deep, and has a 20-foot reach and 11-foot dump clearance. Three independent hydraulic circuits of 25 gpm each are used. According to the manufacturer, the operator can swing a load 90 degrees in about 2 seconds.

All control valves on the Hy-Hoe 250 are cast in block, eliminating leak problems. At the same time, every hydraulic connection is immediately accessible with standard wrenches. All valves are interchangeable.

For further information write to the Hydraulic Machinery Co., Dept. C&E, 1400 National Ave., Waukesha, Wis., or use the Request Card that is bound in at page 18 of this issue. Circle No. 35.



Heaped loads of ½ yard or more reportedly can be handled by the Hy-Hoe 250. The boom swings 200 degrees and has a reach of 20 feet and a dump clearance of 11 feet. The excavator mounts on any 2-ton truck.

New fuel for diesel engines burns better, cuts wear

A fuel for diesel engines, said to improve performance and reduce maintenance problems, has been introduced by the Standard Oil Co. of Indiana.

According to the company, the new fuel cuts wear of injectors, burns better, and gives maximum power and mileage with minimum engine deposits, smoke, and odor.

Standard's Premier diesel fuel will replace Stanolind and Stanolex diesel fuels. It is colored red to distinguish it from distillate heating oil often used for diesel engines.

For further information write to the Standard Oil Co. of Indiana, Dept. C&E, 910 S. Michigan Ave., Chicago 80, Ill., or use the Request Card at page 18. Circle No. 21.

ATTENTION on-the-move users of
WISCONSIN-POWERED *equipment*



you can get factory-engineered parts and service for **WISCONSIN ENGINES** *anywhere . . . at any time!*

You can't predict service emergencies. But you can take positive steps to minimize time loss and costs when one strikes. For no matter when or where the need arises, you are always near one of the 2000 Authorized Wisconsin Engine Service Stations for on-the-spot parts and service.

You can always count on prompt, professional service to restore your Wisconsin Engine to like-new condition *fast!* Your Wisconsin Engine is cared for by factory-trained trouble-shooting specialists. They use Wisconsin parts that are factory-engineered to original Wisconsin Engine specifications and quality. The result: better performance and longer life for your Wisconsin Engine and the equipment it powers.

You are protected even if you service your own, or if you rely on an independent repair shop or the original equipment dealer. Every Authorized Wisconsin Service Station can supply them with Wisconsin factory-engineered parts quickly.

Make it a point to specify Wisconsin factory-engineered parts — and service — for your Wisconsin-powered equipment. Send for complete Service Station Directory S-198, and for Service Bulletin S-261. Write Dept. C-20.

All Authorized Service Stations carry the full line of WISCONSIN PARTS:
pistons, piston rings and pins • valves and valve seat inserts • valve guides, locks, springs • connecting rods • gaskets and seals • oil filter elements • governor parts • spark plugs • magnetos • carburetors • fuel pumps • repair kits • cylinder heads • fuel tanks and many other parts.



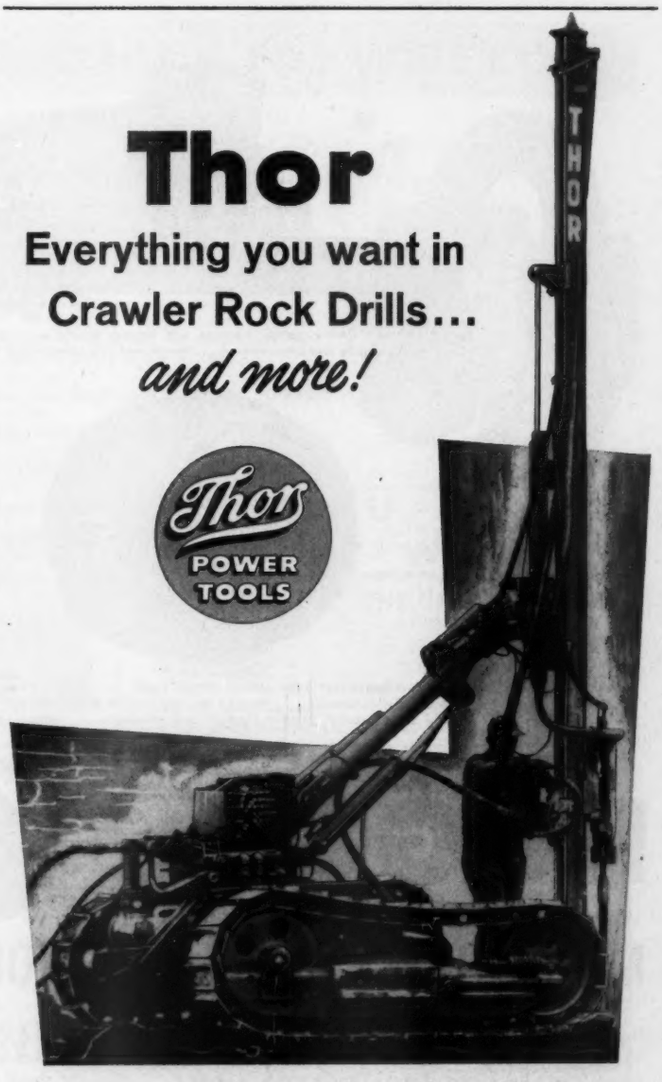
WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines

For more facts, use Request Card at page 18 and circle No. 442

Thor

Everything you want in Crawler Rock Drills...

and more!



Thor's all new Crawler, Model TR-5, outperforms wagon drills three to one and every other crawler by quite a margin. One man operation. All-hydraulic controls completely flexible to maneuver mast and boom into any drilling position. Thor TR-5 is equipped with Thor model 140 4½" drifter. Two 8 h.p. rotary air motors propel the compact drilling machine. Ask your Thor "Red Tool" distributor to show you the movie of this remarkable crawler. Thor Power Tool Company, Aurora, Illinois. Branches in all principal cities.

For more facts, use Request Card at page 18 and circle No. 443



This tilt-cab diesel, Diamond T's Model 931C, tilts manually, in seconds, with no power supply of any kind needed. A simple hand-operated hydraulic pump raises the aluminum and Fiberglas cab to its 45-degree full-open position. No adjustments and no disconnections are required. The vehicle may be serviced with oil and water through an access door in the engine housing without tilting the cab. Five Cummins diesel engines are offered in the 931C series. Gcw ratings range to 78,000 pounds. For further information write to the **Diamond T Motor Truck Co.,** Dept. C&E, 4401 W. 26th St., Chicago 23, Ill., or use the Request Card at page 18. Circle No. 2.



Heavy one-piece frame resists stresses and impact shocks . . . provides solid mounting for engine and transmission . . . keeps machine components in alignment.



Planetary-driven wheel hubs absorb impact loads . . . keep torque at the ground where it belongs . . . cushion the entire drive train. Two heavy-duty driving axles provide positive traction and stability . . . reduce spin-out.



RUGGED

MOTO-LOADERS LICK YOUR TOUGHEST JOBS

Big loads and rough terrain don't hang up a Lorain ML-157 Moto-Loader.® For it has the sure stability that comes from a low center of gravity and a ground-hugging weight-to-axle distribution. No chatter, bounce or teetering—just smooth fast travel with maximum payloads.

Weight is so carefully balanced that the load is carried at optimum height. This avoids ground obstacles and saves dump time at the truck.

Positive control for fast cycles. One foot controls travel direction and acceleration. Operator has both hands free for power booster steering and other operations. He can really coordinate the work flow. With automatic de-clutch, he can inch the load out of the pile or into the truck. Hydraulically operated 4-wheel brakes hold the ML-157 on a 30% grade with full carrying capacity.

See Moto-Loaders in action. Contact your distributor for a demonstration. Choose the model that best meets your needs: the ML-153 for 6000-pound carrying capacity . . . or the ML-157 for 7000-pound carrying capacity. Either will increase your output.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

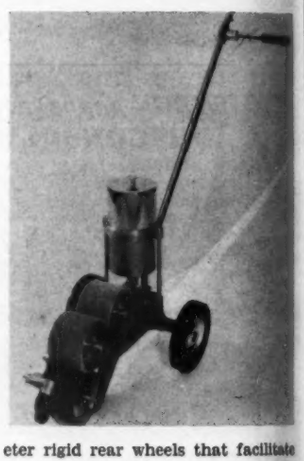
LORAIN. ON THE MOVE

For more facts, use Request Card at page 18 and circle No. 444

No-spray paint striper uses applicator roller

A new Dearborn paint-striping machine is offered by R. E. Muncey, Inc.

Easily maneuvered in a one-man operation, the unit paints lines with a felt paint applicator roller, instead of a spraying application. Interchangeable optional equipment includes 1, 2, 2¼, 3, and 4-inch-wide striping rollers; 3-inch-diameter rear swivel casters; and 8-inch-diameter rigid rear wheels that facilitate movement of the machine in large areas. It is a friction-drive, noiseless machine requiring no gasoline or electric motor.



Flow of the paint is positive under the control of the operator, with no valves or nozzles to become clogged. The machine can be dismantled quickly for optional equipment changes, movement between work locations, cleaning, and storage.

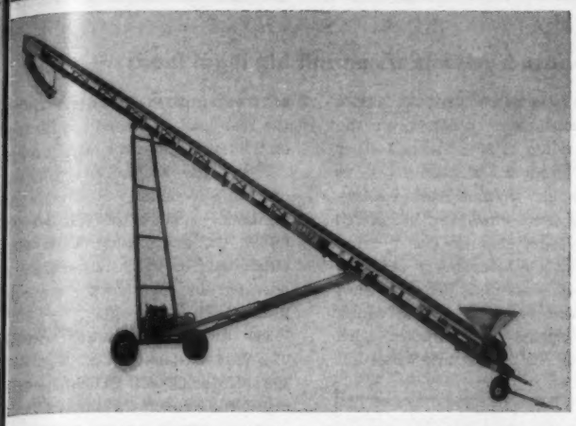
For further information write to R. E. Muncey, Inc., Dept. C&E, P. O. Box 387, Birmingham, Mich., or use the Request Card at page 18. Circle No. 106.

Hydraulic belt conveyor extendable to 50 feet

The Sam Mulkey Co. announces a new hydraulic belt conveyor.

The basic 34-foot unit is extendable by the addition of 8-foot sections and is road-portable to a 50-foot length. The undercarriage and A-frame are telescopic to accommodate and afford maximum balance for 34, 42, or 50-foot lengths.

Power is supplied by either a Wis-



An optional gasoline engine or electric motor feeds a dual-vane pump that drives the hydraulic motor at the upper end of the Mulkey conveyor.

consin 16-hp twin-cylinder gasoline engine or a 7-hp electric motor.

Another feature is an automatic single-lever power winch for elevating and lowering between 4 and 30 degrees. At a 30-degree angle, a discharge height of 26 feet is reached. The belt travels reverse and forward by the simple flip of a lever.

A new gravity hopper holding 3 cubic feet of aggregate or ready-mix concrete is self-supporting and adjustable to the angle of the conveyor trough. It is equipped with a metering gate to control the amount of material fed onto the belt, which travels at the speed of 300 fpm at full load.

For further information write to the Sam Mulkey Co., Dept. C&E, P. O. Box 270, Lee's Summit, Mo., or use the Request Card at page 18. Circle No. 162.

Central mixer for paving and ready-mix plants

The T. L. Smith Co. announces the availability of a new central mixer: the 3-yard turbine, for both ready-mix and paving plants.

The manufacturer states that, in existing or new ready-mix plants, the 3-yard turbine is capable of producing 180 yards per hour. Ease of installation and 54-inch charging-height requirements are other important features.

In highly portable paving plants, a dual installation produces up to 360 yards per hour.

For further information write to The T. L. Smith Co., Dept. C&E, 2835 N. 32nd St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 109.



In existing or new ready-mix plants, the new Smith central mixer can produce 180 yards per hour.

Heavy-duty air wrench for close-quarter work

The Model PW-206P air-powered impact wrench is announced by the Power Tools Department of the Remington Arms Co., Inc.

Delivering more than 2,000 impacts per minute at 90 psi, the compact new wrench is designed for maximum handling ease and convenience in close-quarter operation. It measures 6¾ inches over all, with a 1-inch side-to-center clearance. Weight (less socket) is 3¾ pounds.

The new model features a built-in automatic oiler, a built-in power control, and full power and torque delivery in either forward or reverse rotations, with direction instantly selected by means of a convenient thumb switch.

Maximum size bolt capacity for the wrench is ⅜ inch, with ½-inch square socket drive. It accepts ¼-inch hose and is furnished with a hanger hook for overhead installations.

For further information write to the Remington Arms Co., Inc., Power Tools Department, Dept. C&E, 939 Barnum Ave., Bridgeport 2, Conn., or use the Request Card at page 18. Circle No. 91.

FOR A SAFE FASTENING FOR WIRE ROPE

SPECIFY UPSON-WALTON Gold Clips H-71G

DROP FORGED STEEL CLIP FOR FASTENING WIRE ROPE

LOOK INTO THESE FACTS:

✓Special quality steel heavy U-Bolt carefully formed and accurately threaded.

✓Cold forged double chamfered heavy-hex. nuts with the threads cut accurately.

✓Strong drop-forged steel base shaped to fit the wire rope for tight grip.

✓Free running threads—no paint, lacquers or resins on U-Bolts to gum up threads.

U-W GOLD CLIPS HAVE ALL THESE FEATURES PLUS—MAXIMUM HOLDING POWER

U-BOLT GOLD CHROMATE COATED FOR YOUR QUICK IDENTIFICATION

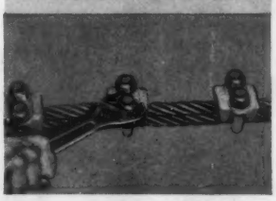
For Additional Information Write or Call Your Distributor Today!



FAST FIELD INSTALLATION



FREE RUNNING THREADS



YOUR ASSURANCE OF QUALITY



WRITE FOR LITERATURE

Manufacturers of Wire Ropes, Rope Fittings, Tackle Blocks, and Crane Hook Blocks

THE UPSON-WALTON COMPANY
12570 ELMWOOD AVENUE
CLEVELAND 11, OHIO
SAN FRANCISCO • CHICAGO • NEW YORK

For more facts, use Request Card at page 18 and circle No. 445

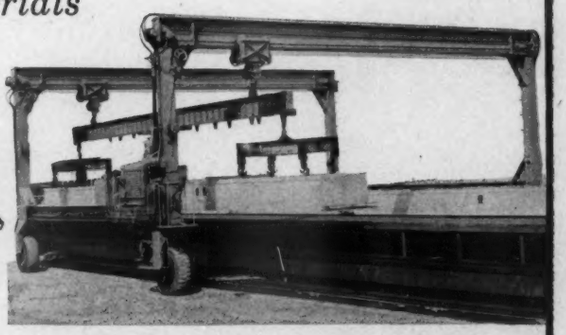
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is the modern way materials handling problems are solved in

PRESTRESSED PLANTS

Travelift

Travelift offers the fastest, safest method of stacking or loading girders.



TRAVELIFT & ENGINEERING, INC.
Dept. CE, Sturgeon Bay, Wisconsin

☐ Please send information on the SELF-PROPELLED TRAVELIFT

NAME_____

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This free-traveling vertical lift carrier steps up the entire pace of your operations. Use Travelift to pull strand, set forms, pour forms, clear beds, store finished beams. Maneuverability excellent. Steering, lifting and propulsion of the *Self-Propelled* Travelift are by hydraulics. Available in 6 models with Capacities of 7, 12, 25 and 30 tons or can be custom built to meet your requirements.

For more facts, use coupon or Request Card at page 18 and circle No. 446



Short-base truck mixers permit big legal loads

Six, 6½, and 7-cubic-yard short-base truck mixers, which locate the rear load 10¼ to 28½ inches farther forward on the truck frame to provide legal loading without frame distortion on a short wheelbase, are offered by The Jaeger Machine Co.

This shorter mounting is achieved by a short, large-diameter drum that is mounted on drum rollers cantilevered beyond their cradles. This eliminates the bowing and distortion of truck frames experienced when the rear load is located too far back on the truck, states the manufacturer.

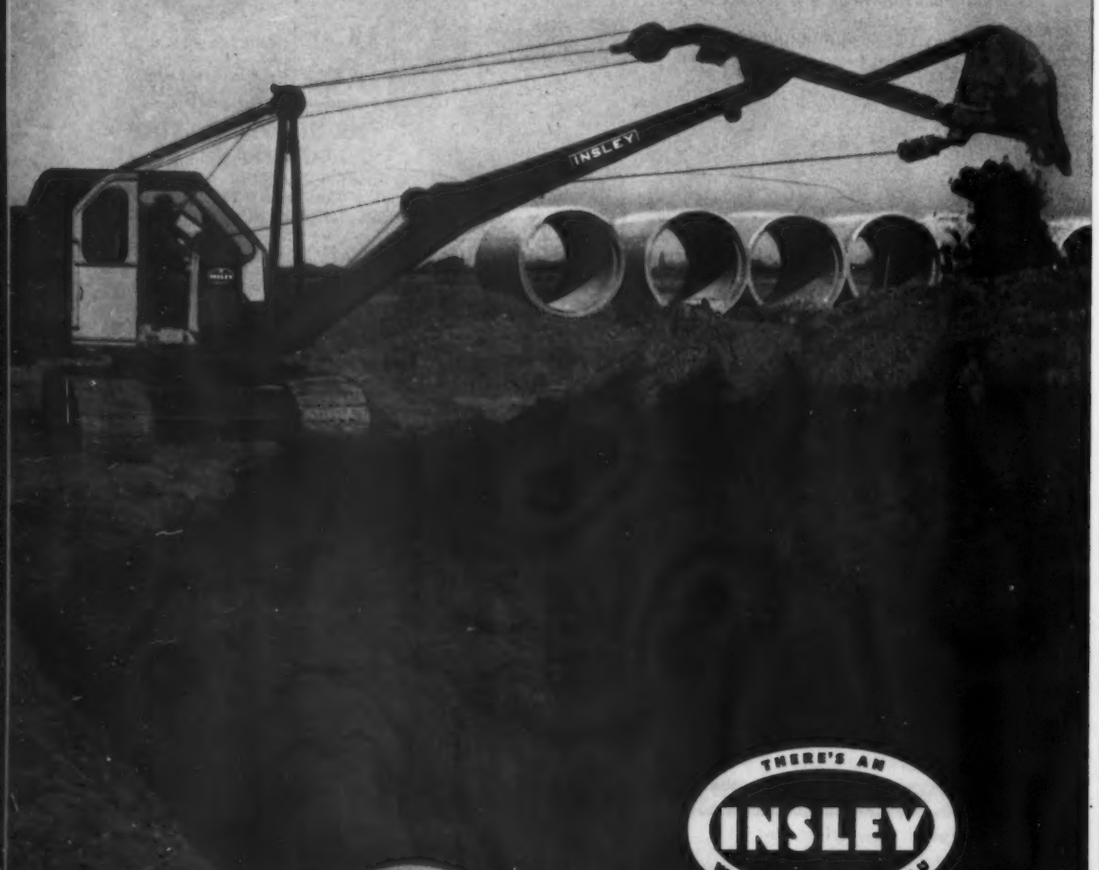
Power-takeoff drive, either flywheel or front-of-engine, makes possible minimum spacing between cab and mixer. An air-pressure water tank, either side or overhead-mounted, is operated by the truck's air compressor.

For further information write to The Jaeger Machine Co., Dept. C&E, 550 W. Spring St., Columbus, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 167.

Each bite's a profit bite

● Put the Insley M backhoe on the job and watch how it moves more earth in any given time. That's because the Insley M takes a full bite—plus that extra amount that means extra profits. The Insley M is a full ¾ cu. yd. machine—on paper and on the job . . . and it's "power matched" for a profitable combination of performance, efficiency and long life.

See your Insley distributor and let him show you an Insley M working in your area. See how it meets your requirements, as an excavator, self-propelled crane or truck crane. And get the facts on the complete line of Insley machines—5 to 45 ton crane capacity, ½ to 1½ cu. yd. bucket capacity, crawler, self-propelled carrier and truck mountings.



THERE'S AN INSLEY WORKING NEAR YOU

INSLEY MANUFACTURING CORPORATION
Indianapolis 6, Indiana

Liquid sealer for cracks in asphalt, concrete

A new rubberized liquid sealer for cracks in asphalt and concrete pavements is announced by Maintenance, Inc.

Known as Lastek 33, it is said to prevent water penetration and subsequent freeze-thaw damage. It pours from small-nozzle cans or cones.

For further information write to Maintenance, Inc., Dept. C&E, W. Liberty St. Extension, Wooster, Ohio, or use the Request Card at page 18. Circle No. 76.

Oil-condition indicator serves all engine types

The Gerin Corp. announces the Model DG oil-condition indicating meter for all types of engines.

The indicator is an accurate gage-type meter designed to reveal at a glance the condition of the engine oil, with respect to whether it is time to change oil or filter, and to detect hidden engine defects.



The meter is said to respond to changes in the oil due to contamination by dilution, water, running on dead filters, and other like causes, because it is not affected by variations in crankcase temperature.

For further information write to The Gerin Corp., Dept. C&E, Avon, N. J., or use the Request Card at page 18. Circle No. 174.

◀ For more facts, use Request Card at page 18 and circle No. 447

Improvements are offered on tractor-shovel model

According to The Frank G. Hough Co., the Series B model of the H-90 Payloader tractor shovel offers numerous improvements, which increase production and better the performance of the 4-wheel-drive unit.

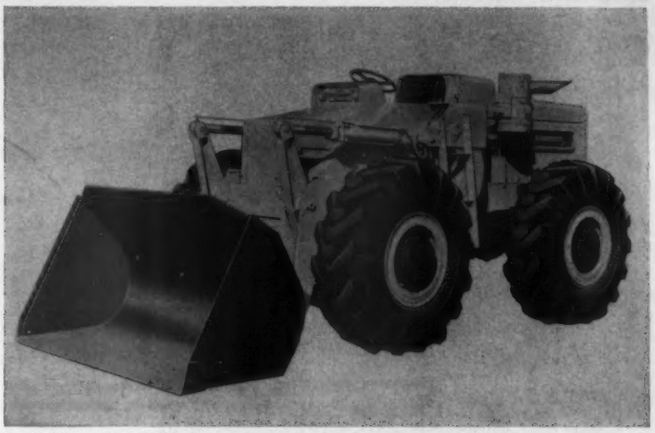
While the operating capacity of the H-90 Series B unit remains at 9,000 pounds, the peak lift has been increased to 18,000 pounds. This model now has a longer wheelbase and wider tread; this, along with greater machine weight, provides better balance and greater stability for operation under adverse conditions.

Additional power is provided by a new Cummins turbocharged diesel engine, which develops 162 horsepower at 2,100 rpm. A GMC diesel, which develops 153 horsepower at 2,200 rpm, is offered as an option.

Major improvements in the full power-shift transmission and the torque converter give better throttle response and better operating characteristics, states the manufacturer.

The standard tire size has been increased to 18.00 × 25 to insure additional traction and flotation.

For further information write to The Frank G. Hough Co., Dept. C&E, 762 Seventh Ave., Libertyville, Ill., or use the Request Card at page 18. Circle No. 34.



Peak lift on the H-90 Series B Payloader has been increased to 18,000 pounds.

More tread contact area with new tractor tire

The Firestone Tire & Rubber Co. announces a new tractor tire for on and off-the-road jobs.

Available as original equipment on new tractors, this tire features a new tread with shorter, wider traction bars that give more tread contact area.

The tire is built with the firm's shock-fortified cord body for greater resistance to impact breaks and is ruggedly constructed of six plies for tough industrial work.

For further information write to The Firestone Tire & Rubber Co., Dept. C&E, 1200 Firestone Pkwy., Akron 17, Ohio, or use the Request Card that is bound in at page 18. Circle No. 99.

To Keep Power Equipment Running To Stand Guard on the Job . . .

THE ANSWER IS Anthes

The WEATHERCAP®



Rain cannot get in a vertical exhaust protected by Weathercap. Range of sizes to fit 1" to 6⅜"O.D. Fully automatic

OPENS at the first touch of exhaust pressure, CLOSES the instant the engine stops . . . Now standard equipment on over 35 nationally known names in tractors and powered equipment.

The FLAME-GUARD Construction Torch



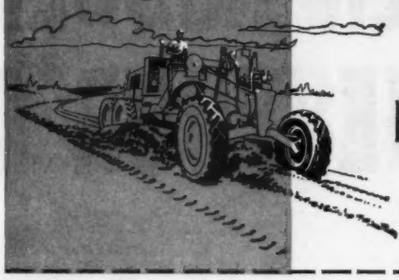
New self-righting torch with an exclusive square-type burner which STAYS LIT in the worst weather . . . Burning time of 24 to 48 hours . . . Quality Anthes construction throughout.

Get the full answers and literature from

Anthes DIVISION GLEASON CORPORATION FORT MADISON, IOWA

For more facts, circle No. 448

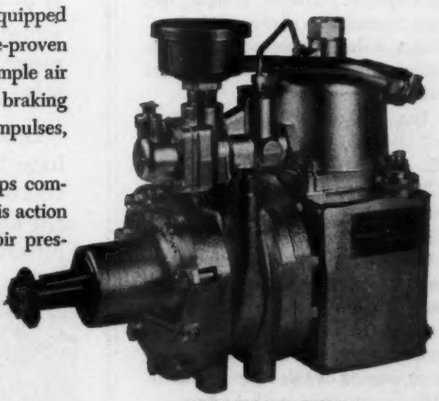
To provide *SAFER* stopping power...



Wagner Lockheed ROTARY AIR COMPRESSORS deliver ample air for safe operation of brakes

You'll have plenty of air for safe, sure stops when vehicles are equipped with Wagner Lockheed Rotary Air Compressors. The time-proven rotary action contributes to rapid pressure recovery, assuring ample air reserve. This means safer stopping power even under severe braking conditions. Rotary action, with its overlapping air compression impulses, also contributes to smoother, quieter operation of unit.

Pumping is regulated by a control valve which starts or stops compression by "loading" or "unloading" the compressor proper. This action establishes an intermittent pumping cycle which keeps reservoir pressure within the desired range.



STANDARD TYPE

Available in either 9 C.F.M. capacity, air or water cooled; or 12 C.F.M. capacity, water cooled. Also in "Drive-Thru" type.



"DRIVE-THRU" TYPE

Rotary Air Compressor is designed for use on diesel engine vehicles. It features all the advantages of rotary compression.

FOR DETAILS on these compressors, and information on complete Wagner Lockheed Air Brake Systems and Equipment for trucks, trailers, tractors, buses and off-the-road equipment, write for a copy of Catalog KU-201. REMEMBER, when ordering new equipment, be sure to specify Wagner Lockheed Air Brakes.

CONSULT YOUR WAGNER AIR BRAKE SPECIALIST



. . . There's one in *every* Wagner Branch. He is a factory trained expert who can assist you with your air brake program.

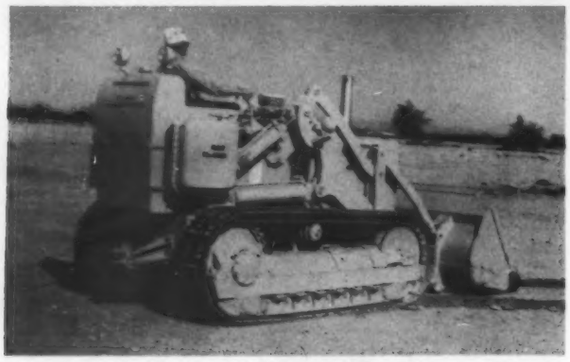


Wagner Electric Corporation
6364 Plymouth Avenue, St. Louis 33, Mo., U.S.A.

WK60-4C

LOCKHEED BRAKE PARTS, FLUID, LINING and LINED SHOES • AIR HORNS • AIR BRAKES • TACHOGRAPHS • ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES

For more facts, use Request Card at page 18 and circle No. 449



The new power-shifted 955 Series H Traxcavator is powered by a 100-net-hp diesel engine. The bucket capacity of the unit is 1¾ cubic yards.

Power-shift transmission featured on excavator

A new Traxcavator, featuring a power-shift transmission, has been announced by the Caterpillar Tractor Co.

Designated 955 Series H, the 100-net-hp machine is powered by a compact, turbocharged 4-cylinder diesel engine. Bucket size has been increased from 1½ to 1¾ cubic yards.

The new transmission permits single-lever shifting through all phases of the work cycle. A total of four work speeds is available to the operator, there being two gear speeds in both high and low work ranges.

According to the company, superior digging action and a 23 per cent increase in lifting capacity result from a new hydraulic system for the loader.

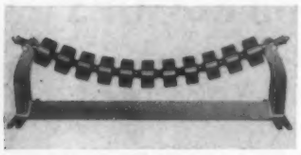
Forward speeds are: low range, 0 to 2.08 mph and 0 to 3.86 mph; high range, 0 to 2.68 mph and 0 to 4.97 mph. Reverse speeds are: low range, 0 to 2.62 mph and 0 to 4.83 mph; high range, 0 to 3.35 mph and 0 to 6.16 mph.

Dumping height is 130 inches, with a dumping reach of 41.2 inches at a 45-degree discharge angle.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 144.

Conveyor carrier offers true catenary suspension

Stephens-Adamson announces a new catenary conveyor carrier, known as Flexiroll, said to provide true catenary suspension for the conveyor belt under all load conditions.



The carrier rollers resist reaction to corrosive, abrasive, greasy, oily, and combustible materials. Natural flexing action of the carrier reduces material breakage, spillage, and build-up.

The all-steel jig-welded frame is self-cleaning, as is the roller assembly.

The Flexiroll carrier is available for 18, 20, 24, 30, and 36-inch belt widths.

For further information write to the Stephens-Adamson Mfg. Co., Standard Products Division, Dept. C&E, 275 Ridgeway Ave., Aurora, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 112.

Power-steering systems are fully integrated

Completely integrated power-steering systems for highway and off-the-road motor vehicles with axle loadings up to 128,000 pounds are offered by Vickers, Inc.

Either full-time or part-time steering is available, with manual steering accomplished through the mechanical steering gear in case of engine failure.

The system is attached to the steering linkage on the vehicle's undercarriage, and its compact size reduces installation space. It is available either as an integral linkage unit or as a remote unit in which the valve and cylinder are separated.

For further information write to Vickers, Inc., Dept. C&E, P. O. Box 302, Detroit 32, Mich., or use the Request Card that is bound in at page 18 of this issue. Circle No. 31.

SPICER RUBBER ELEMEN
SOLVE YOUR TORSIONA

If you are faced with the problem of torsional vibration from impulses within the operating range, Dana engineers may be able to help you solve your design problems.

Spicer resilient propeller shaft assemblies have been used successfully for years in rapid transit cars, street cars, engine dynamometer, truck, bus, earthmover and passenger car applications to solve difficult torsional problems.

Spicer rubber-cushioned shafts make it possible for design engineers to "tune out" the vibration and thus produce commercially acceptable installations.

Spicer rubber-cushioned propeller shafts offer these additional advantages:

1. The torsional flexibility limits the effect of high impact loads resulting from rough shifts and other sudden torque changes.
2. The cushioning effect prevents clatter, rattle, and backlash noises.
3. Increased life of bearings, gear teeth, splines, and other components due to the reduction of high impact and torsional loads.
4. Reduction of noise transfer.
5. Axial flexibility to cushion forces resulting from length changes.



International 295 Payscraper, equipped with a Spicer rubber element shaft, at work on the Interstate Highway System.

Product knowledge and years of experience are available to you through Dana engineers to help solve your torsional problems. Contact them today.

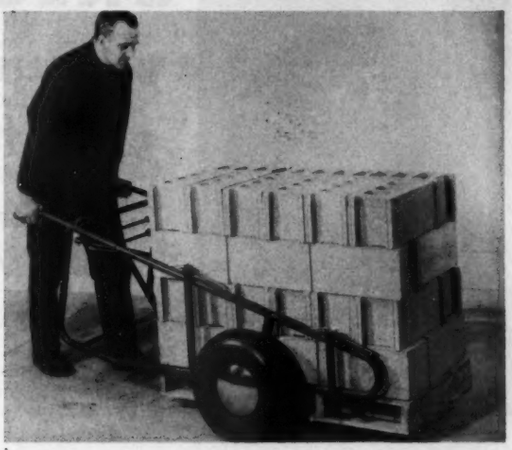
New unit is available for subsurface sampling

The new pitcher sampler from Mobile Drilling, Inc., is designed specifically to recover accurate samples from problem clays, soft rock, and friable shales.

The company points out that drilling fluid cannot erode or contaminate samples even in soft overburden or water-sensitive formations. The unit features a spring-seated Shelby tube that telescopes into outer barrel as cutters core harder formations to eliminate excessive pressures and prevent tube damage. Equally important, the pitcher sampler requires no presetting or surface control. The drill can be stopped, and the rod rechucked and even raised slightly without breaking the core. No separate reaming operations are needed to obtain deeper samples.

The unit is equipped with a new sliding valve that directs drilling fluid through the Shelby tube to the hole bottom for thorough flushing action. When the tube contacts bottom, the valve automatically diverts fluid to annular space between tube and cutter barrel.

For further information write to Mobile Drilling, Inc., Dept. C&E, 1244 N. Cornell Ave., Indianapolis 4, Ind., or use the Request Card at page 18. Circle No. 164.



Designed to handle pallet loads of materials, the Ezy-Load straddle truck has a capacity of 1,200 pounds.

Manually operated truck handles palletized loads

A new manually operated 2-wheel truck, which will handle lift-truck pallet loads of all types of building materials, is announced by Valley Craft Products, Inc.

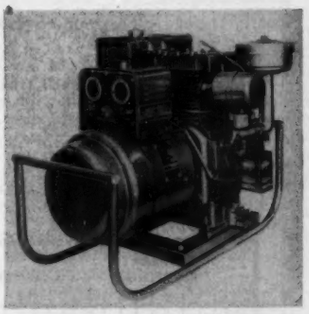
Known as the Ezy-Load straddle truck, the unit is entirely mechanical in operation and can be handled by ordinary labor. Ruggedly constructed from 1-inch iron pipe, it has a 1,200-pound load capacity.

For further information write to Valley Craft Products, Inc., a division of O'Neill-Irwin Mfg. Co., Dept. C&E, 750 Jefferson Ave., Lake City, Minn., or use the Request Card at page 18. Circle No. 126.

Offer engine generators rated at 4,000 watts

The Wincharger Corp. announces the 4B23S2D-F Series engine generators rated at 4,000 watts.

According to the manufacturer, they will start and power a 3-hp motor under full rated load; or will safely carry a 4,000-watt load of lights on a single 115 or 230-volt circuit; or will carry many typical standby loads beyond the capacity of ordinary 3,500 or 4,000-watt generators.



These new Winco generators are available in electric, manual, or remote-starting models; and with either carrying cradle or 2-wheel dolly.

For further information write to the Wincharger Corp., a subsidiary of the Zenith Radio Corp., Dept. C&E, Insurance Bldg., Sioux City 2, Iowa, or use the Request Card at page 18. Circle No. 149.

HAFTS CAN HELP YOU
ESONANCE PROBLEMS



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Spicer
DANA
CORPORATION
Toledo 1, Ohio

Serving Transportation—Transmissions • Auxiliaries • Universal Joints • Clutches • Propeller Shafts • Power Take-Offs • Torque Converters • Axles • Powr-Lok Differentials • Gear Boxes • Forgings • Stampings • Frames • Railway Drives

Many of these products are manufactured in Canada by Hayes Steel Products Limited, Merritton, Ontario

For more facts, use Request Card at page 18 and circle No. 450



UNLOAD
✓ quickly
✓ safely
and with just ONE MAN

Unload sand, stone and other aggregates just as fast as your conveyors can work. No bottleneck at unloading point.

THE NATIONAL CAR SHAKER

Write today!

NATIONAL CONVEYOR & SUPPLY CO. 359 N. Harding Ave. Chicago 24, Illinois

For more facts, use Request Card at page 18 and circle No. 451

ON ROAD WORK—

Tamping fill around 4 ft. concrete pipe culvert on New York State Thruway Extension near West Seneca, N.Y. The Barco Rammers are owned by S. J. Groves & Sons Co., Syracuse, N.Y. (Photo: CONSTRUCTIONEER)

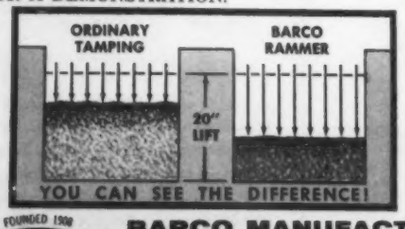


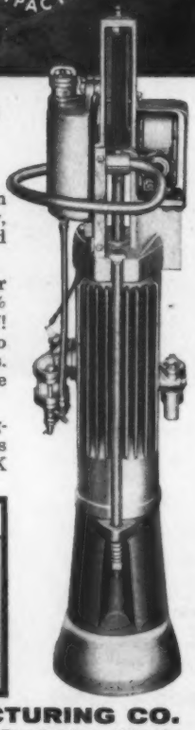
Barco Rammers are Essential

CHECK THE RECORDS for *soil compaction* on every top ranking highway, toll road, thruway, or freeway built in recent years and you will find Barco Rammers!

Easily meet rigid specifications—In test after test, Barco Rammers have delivered 95% to 97.5% compaction (modified Proctor Method)—EASILY! EFFICIENTLY! ECONOMICALLY! The Barco Rammer is especially useful in restricted areas. ONLY Barco can produce specified high degree compaction on lifts up to 20 inches.

Get jobs finished on time—One of the biggest advantages offered by Barco Rammers is ability to handle work in minimum time. ASK FOR A DEMONSTRATION.





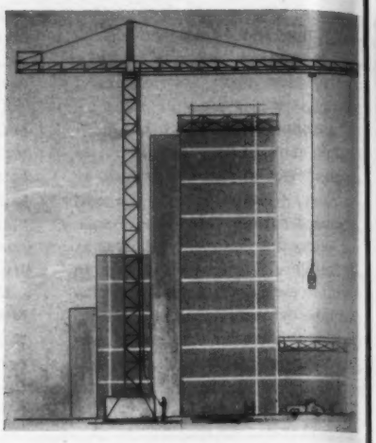
FOUNDED 1909 BARCO PRODUCTS BACKED BY EXPERIENCE

BARCO MANUFACTURING CO.
5186 Hough Street • Barrington, Illinois

Sold and Serviced by Nation's Leading Distributors

For more facts, use Request Card at page 18 and circle No. 452

Product Parade—YOUR HEADQUARTERS FOR INFORMATION ON NEW EQUIPMENT AND MATERIALS . . .



The Shlagromatic tower crane can be operated, by push-button control, from the top work level, as well as from the ground.

Material-handling crane handles 100-foot lifts

A new tower crane has been announced by the Shlagro Steel Products Corp.

The Shlagromatic Mark I extends to 100 feet in height, has a maximum reach of 65 feet from center at full height with a capacity of 2,000 pounds, and is capable of rotating 360 degrees. The crane is mounted on rails to insure maximum mobility on the job.

Completely electrically powered, the Shlagromatic tower crane is operated by push-button remote controls. If desired, the crane may be operated from the top work level, as well as from the ground.

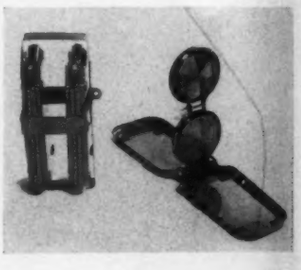
For further information write to the Shlagro Steel Products Corp., Dept. C&E, 84 Washington Ave., Somerville 43, Mass., or use the Request Card at page 18. Circle No. 121.

Reflector flare kit for roadside stops

The R. E. Dietz Co. offers the No. 321 reflector flare kit, consisting of three reflex reflector flares and a mounting bracket with provisions for locking.

The kit is also available with three flags and flagstaffs.

For further information write to the R. E. Dietz Co., Dept. C&E, 225 Wilkinson St., Syracuse 1, N. Y., or use the Request Card at page 18. Circle No. 135.



6 WAYS TO SAVE with BIL-JAX



BIL-JAX

Whatever your off-the-floor job, there's a Bil-Jax scaffold designed to save you most in time and money. What's more, your men work in safety, at peak efficiency. Choose now the exact equipment best suited to you. Sales and rental outlets in principal cities.

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RENTAL AND SALES OUTLETS THROUGHOUT U.S. AND CANADA

For more facts, use Request Card at page 18 and circle No. 453

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121.

















This International Model B-100 truck is equipped with a new 89-inch-long service-utility body that has an unobstructed interior width of 48½ inches.

Service-utility bodies for light-duty trucks

Seven new service-utility bodies designed specifically for International light-duty trucks have been announced by the Motor Truck Division of the International Harvester Co.

The bodies, for models of 4,200 to 8,800 pounds gvw, are offered in four conventional and three completely enclosed models.

All bodies offer 48½ inches of unobstructed space between compartment sides. Conventional models are available in 79, 82½, 89, and 100-inch lengths. Enclosed models, with locking double rear doors, are offered in 82½, 89, and 100-inch lengths.

Optional equipment available includes an overhead rack with adjustable ladder and material brackets, telescopic steel roof with locking end gate, side-mounted pipe-carrying brackets, and a removable vise and pipe-threader bracket.

For further information write to the International Harvester Co., Motor Truck Division, Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 159.

Hydraulic power pumps develop 10,000 psi

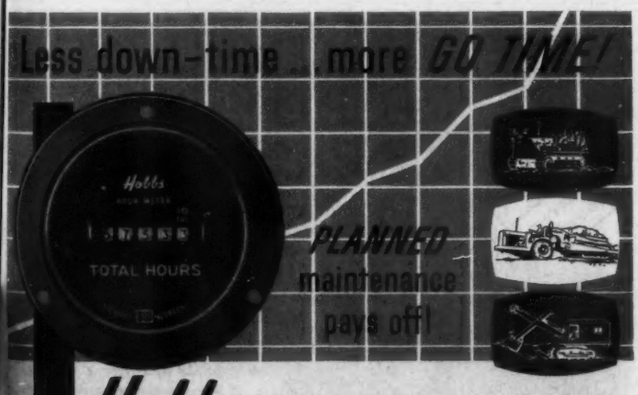
Four new heavy-duty hydraulic power pumps developing 10,000-psi continuous pressure, and especially designed to drive rams, jacks, presses, and similar hydraulic units, are announced by the Greenlee Tool Co.



Powered by a self-contained ¾-hp 115 to 230-volt, ac, single-phase, constant-speed (1,725 rpm) capacitor-type electric motor, the new No. 1721 Series pumps have a pumping capacity of 150 cubic inches per minute at pressures up to 150 psi, and automatic change-over to 30 cubic inches per minute up to 10,000 psi.

The motor can be started under load, while the ram is held in position under pressure. These pumps feature an outlet block having two ⅜-inch npt and pipe outlets for pressure takeoff and return.

For further information write to the Greenlee Tool Co., Dept. C&E, 2136 12th St., Rockford, Ill., or use the Request Card at page 18. Circle No. 120.



Hobbs HOUR METERS

For better performance and longer service from your equipment, plan maintenance on operating TIME . . . you'll also set up a realistic basis for renting and leasing, service contracts, buying and selling. Be sure with Hobbs electric timing instruments — revolution counters can't do the job! Available for ALL your equipment: d-c meter for engine or battery-powered units . . . a-c meter for line-powered equipment.

● *Manufacturers also of pressure switches . . . shock-mounted head, tail and dash lights . . . indicator, instrument and warning lights. Distributors in principal cities . . . WRITE FOR CATALOG 600.*

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John W. Hobbs Corporation
A DIVISION OF STEWART-WARNER CORPORATION
2067 YALE BLVD. SPRINGFIELD, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 454

ESSICK
VIBRATING COMPACTORS



Essick VR-28-W Self-Propelled Vibrating Compactor on Golden State Freeway

COSTS CUT IN HALF . . .
PRODUCTION TRIPLED . . .
SPECIFIED DENSITIES EXCEEDED . . .

ESSICK 28" VIBRATING COMPACTOR OUTPERFORMS OTHER EQUIPMENT ON SOIL OR ASPHALT

Charlie Brown of the Chas. T. Brown Construction Company states:
"We were working on the Golden State Freeway in Los Angeles, compacting backfill around bridge abutments and drainage pipes. At the start of the job, compaction costs were running about $1,300 per month per compaction unit which consisted of a compressor and three pneumatic tampers.

"Having successfully used Essick Vibrating Compactors on other projects, we felt that we could get better densities at less cost in the confined areas of this job with the Essick 28" self-propelled vibrating model.

"We put the Essick VR-28-W to work and cut monthly costs to about $650 per compaction unit (about one-half), tripled our production, and exceeded our best past compaction performance. Being self-propelled, the Essick 28" Vibrating Compactor is just the ticket for backfill operations on soil and in hard-to-get-at locations. It gives the most compaction at the least expense, and exceeds specifications in record time."

Many Contractors are finding that the 865 lb. VR-28-W, with its High Frequency Vibration, exceeds the compaction of a sixteen-ton static roller on soil. This multiple purpose tool has also revolutionized highway maintenance by putting down better asphalt patches at greatly reduced costs. Carrying hooks make it completely mobile, and being self-propelled, it will go just about anywhere compaction is required.

SEE YOUR ESSICK DEALER FOR A DEMONSTRATION



9 Models of Vibrating Compactors from 13" to 72" widths
Also 14 Models of Tandem Rollers from ½ to 14 Tons

ESSICK MANUFACTURING COMPANY

1950 SANTA FE AVENUE
LOS ANGELES 21, CALIFORNIA

850 WOODRUFF LANE
ELIZABETH, NEW JERSEY

Affiliated with THE T. L. SMITH CO., Milwaukee, Wisconsin

For more facts, use Request Card at page 18 and circle No. 455

Offer external vibrator with 10,000-rpm capacity



A high-speed, pneumatic external vibrator utilizing a turbine wheel for its power source is announced by the Viber Co.

Known as TurboViber, the unit is particularly adapted for use in the manufacture of concrete pipe and in prestressed-concrete production. Through a speed of 10,000 rpm or more it develops forces of well over a ton, according to the manufacturer.

The TurboViber requires no vanes or cylinders, and there is no sliding friction.

Five mounting methods facilitate ready application to virtually any external vibrating operation.

For further information write to the Viber Co., Dept. C&E, 726 S. Flower St., Burbank, Calif., or use the card at page 18. Circle No. 25.



The new automatic-set template positioner attachment for the Twin Track-O-Matic welder permits automatically dropping the templates in close-tolerance position as it passes over the track secured on the welding table.

Device cuts time factor in track-rail welding

The Automatic Welding Co. offers a new automatic-set template positioner attachment for the firm's recently announced Twin Track-O-Matic welding unit, said to reduce the time required in this operation by up to 80 per cent—in addition to guaranteeing greater accuracy.

According to the manufacturer, the weld pattern is automatically governed by an Electro-Set template positioner and photoelectric template scanner, which accurately spaces the metal build-up, shutting off the arc at the track joints.

The attachment permits the automatic dropping of the templates in close-tolerance position as it passes over the track secured on the welding table.

The Twin Track-O-Matic reportedly is capable of handling all sizes and types of tracks and will complete a ¼-inch build-up on a D8-size tractor rail in approximately [illegible] hours, with one operator.

For further information write to the Automatic Welding Co., Dept. C&E, Airport Road, Waukesha, Wis., or use the Request Card that is bound in at page 18 of this issue. Circle No. 146.

Scraper-ripper features positive depth control

The Hensley Equipment Co., Inc., announces a new portable twin-shank scraper ripper.

The unit is available in three sizes and operates on all scrapers that have an independently operated apron or door. Lightweight and easy to install, these rippers will operate effectively on rock, shale, and hardpan.

Especially effective for blacktop removal, the Hensley ripper gives positive depth control. Its 15-inch spacer bars also break up the riprap into chunks no larger than the 15-inch clearing area.

For further information write to the Hensley Equipment Co., Inc., Dept. C&E, 800 Peralta Ave., San Leandro, Calif., or use the Request Card at page 18. Circle No. 17.

MARVEL
SYNCLINAL FILTERS

FOR DEPENDABLE PROTECTION on all Hydraulic and other low pressure circulating systems

Designed to give more ACTIVE filtering area—MORE dependable protection—MORE productive operation before cleaning is necessary. *Meet J.I.C. Standards.*



Synclinal SUMP TYPE

CAPACITIES: 5—8—10—20—30—50—75 and 100 G.P.M.
PIPE SIZES: ¾"—1"—1¼"—1½"—2"—2½" and 3".
CONNECTIONS: Coupling—Male Nipple.
BY-PASS VALVE: Not Available.



Synclinal LINE TYPE

CAPACITIES: 5—8—10—20—30—50—75 and 100 G.P.M.
PIPE SIZES: ¾"—1"—1¼"—1½"—2"—2½" and 3".
BY-PASS VALVE: Not available.
OPERATING PRESSURES: Up to 80 p.s.i.



Bonded SUMP TYPE

CAPACITIES: 10—20—30—50 and 75 G.P.M.
PIPE SIZES: 1"—1¼"—1½"—2"—and 2½".
CONNECTIONS: Coupling—"O" Ring—Male Nipple.
BY-PASS VALVE: Available with or without



Bonded LINE TYPE

CAPACITIES: 10—20—30—50 and 75 G.P.M.
PIPE SIZES: 1"—1¼"—1½"—2" and 2½".
BY-PASS VALVE: Available with or without.
OPERATING PRESSURE: Up to 250 p.s.i.
OPERATING TEMPERATURES up to 300° F.



Tandem SUMP TYPE

CAPACITIES: 10—16—20—40—60—100—150 and 200 G.P.M.
PIPE SIZES: ¾"—1"—1¼"—1½"—2"—2½" and 3".
CONNECTIONS: Coupling—Male Nipple.
BY-PASS VALVE: Not available.



IN-LINE FILTER

CAPACITIES: Up to 60 G.P.M.
PIPE SIZES: ¾"—1"—1½" and 1½" (at both inlet and outlet).
BY-PASS VALVE: Available with or without

FILTERING MEDIA in all Marvel Filters is Monel wire cloth available in mesh sizes of 30-40-50-60-80-100-150 and 200 to meet your filtration requirement.
EASY TO CLEAN—All Marvel Filters are easy to clean. Line type units operate in any position and may be serviced without disturbing pipe connections.
OVER 900 O. E. M's. install Marvel Filters as Standard Equipment.

IMMEDIATE DELIVERY

For further information on a specific type filter—Write—wire or phone

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Phone: JUniper 8-6023



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☐ Hydraulic Oils ☐ Coolants ☐ Lubricants ☐ Fire Resistant Fluids
☐ Water ☐ Sump Type ☐ Line Type ☐ In-Line

Name_____
Company_____
Address_____
City_____ State_____

For more facts, use coupon

Make more money by handling more trenching jobs... *Faster...* with an ARPS TRENCH HOG!



★ *Economy* . . . priced well below independent-drive machines. Operation and maintenance costs are rock-bottom low.

★ *Speed* . . . up to 800' hourly dependent upon soil conditions.

★ *Big Capacity* . . . depth capacities of 3½', 5½', and 7'; trench widths of 6" to 20".

★ *Choice of Cutters* . . . slicer for normal, wet, or sticky soils; chisel for hard, rocky soils; super-service for frozen ground.

★ *Accurate* . . . Precise depth control obtained by power pump boom control valve.

★ *Independent Wheel Control* . . . for each tractor drive wheel insures straight line digging or curve trenching.

★ *Optional Features* . . . Include standard and tiling crumbers, one-side dirt delivery. Front-mounted Dual-Action Dozer available for fast backfilling.

Write today for literature and prices. Dept. C&E

ARPS CORPORATION New Holstein, Wis.

TRENCHERS • HALF TRACKS • BULLDOZERS • UTILITY BLADES

For more facts, use Request Card at page 18 and circle No. 456



Powered by a 36-hp engine, the Tampo Model VC80 weighs 7,000 pounds and offers compacting power up to 80 tons.

Vibratory compactor has 60-inch rolling width

The Tampo Mfg. Co. announces the Model VC80 towed-type vibratory compactor featuring a fully variable vibration frequency range and a visible means of determining compaction effect.

The unit is designed to provide maximum centrifugal force per foot of drum width to prevent bridging over tractor and grader tire marks during rolling operations.

Specifications include a rolling width of 60 inches, a 7,000-pound gross weight, and compacting power of up to 80 tons. The unit is powered by an air-cooled gasoline engine of 36 horsepower.

Mechanical features include a balanced frame for easy attaching to a towing vehicle, a micro-setting throttle control for precise settings, and an integral unit vibrating mechanism, lubricated by pressure fittings. The Tampo Vibra-Meter is furnished as standard equipment.

For further information write to the Tampo Mfg. Co., Dept. C&E, P. O. Box 4248, Station A, San Antonio 7, Texas, or use the Request Card at page 18. Circle No. 127.

Sealer, crack filler is highly flexible

A new rubber-asphalt joint sealer and crack filler has been developed by the United States Chemical Co., Inc.

Called Join Seal, it reportedly bonds well to concrete, steel, masonry, and other surfaces, and remains flexible over a long period of time. Its blend of rubber and asphalt enables it to stretch as joints expand and to withstand moisture.

This sealer is offered in a standard tube that fits ordinary calking guns and has a tip that can be cut to the desired width of application.

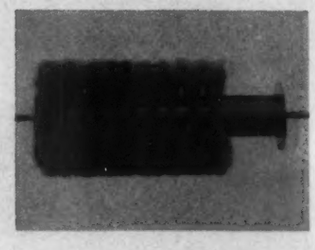
For further information write to the United States Chemical Co., Inc., Publicity Dept., Dept. C&E, Suite 314, 1345 N. Bldg., Lincoln, Nebr., or return the Request Card that is bound in at page 18 of this issue. Circle No. 23.

New type of wire broom offers several features

A new-type broom featuring quick assembly, improved sweeping ability, and extra-long life is available from the Roadmaster Brush Corp.

Designated UniSweep, it consists of round, steel-wire sections mounted in multiple on a steel core. Each section is pressed to form convolutions so that, when completely assembled, the brush effects a crisscross spiral. Uniform density and fill are assured, states the manufacturer.

Heavy objects normally left by conventional brushes are said to be easily swept up by this broom. Streaking is eliminated, and the broom works equally well on rough ground or when used on smooth streets.



For further information write to the Roadmaster Brush Corp., Dept. C&E, P. O. Box 321, Union, N. J., or use the Request Card at page 18. Circle No. 20.

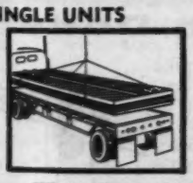
MOTOR TRUCK SCALES that SAVE You Money*

PORTABLE .... HEAVY-DUTY .... SELF-CONTAINED

CAPACITIES TO 100 TONS



- TANDEM CONNECTED UNITS
- SPLIT FRAME UNITS
- SINGLE UNITS



*These Portable Scales are designed from the ground up to give you greater operating efficiency at lower cost.
Two types of decks are offered: Heavy Checkered Steel Plate Runway or timber decks.
These scales are easily transported with the two steel bulkheads being held in place by two bolts, which are easily removable for transporting.
Scales are of all-steel construction, eliminating problem of breakage. Simple design.

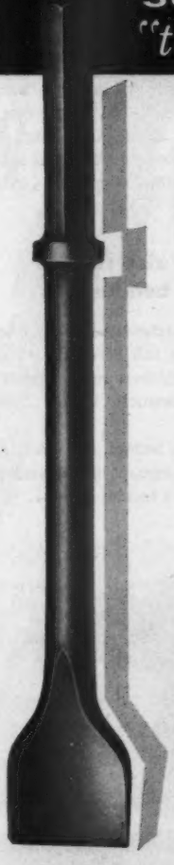
Write Dept. CAE For Complete Information

Cardinal SCALE MFG. CO.
P. O. Box 151 — Webb City, Mo.

For more facts, use Request Card at page 18 and circle No. 457

VULCAN

SUPER SERVICE "time-tested" Tools!



Pavement Breaking Tools giving maximum performance at minimum cost

Impact! Get more with Vulcan's superior heavy-duty line of pavement-breaking tools. These job-matched tools get the toughest jobs done fast; give profit-conscious contractors more productive power at minimum cost.

Vulcan Super Service tools are exceptionally durable, fully heat treated to insure dependable breaking power. Their unusual strength insures longer wear, fewer maintenance problems.

Super Service Tools, including moil points, chisel bits, and many others have been time tested for over 25 years. They are liberally guaranteed by Vulcan Tool, manufacturers of pavement breaking tools for over half a century.

ALSO SPECIFY VULCAN FOR:

- Clay Digging Tools
- Drill Steels
- Chipping Hammer Tools
- Hand Tools for Concrete, Stone and Steel Workers





VULCAN TOOLS are sold exclusively thru distributors

VULCAN TOOL MANUFACTURING COMPANY
41 Liberty Street, Quincy 69, Massachusetts

Specialists in the Design and Production of Pneumatic Tool Accessories

For more facts, use Request Card at page 18 and circle No. 458



Increased range and cruising speed are features of the twin-engine Aero Commander Model 500A.

Two-engine airplane cruises at 220 mph

The Aero Commander 500A, a 6 to 7-passenger airplane powered by two Continental 260-hp fuel-injection engines, is announced by the Aero Design & Engineering Co.

The plane has a cruising speed of 220 mph at 70 per cent power, and a range of 1,420 miles at 45 per cent power with 30-minute reserve at normal fuel capacity.

Takeoff and landing distances, over a 50-foot obstacle (short field), are 1,200 and 1,130 feet, respectively.

For further information write to the Aero Design & Engineering Co., Dept. C&E, Box 118, Bethany, Okla., or use the Request Card that is bound in at page 18 of this issue. Circle No. 143.

Increase size range of hand benders

A new ratchet-action hand bender for making full 90-degree bends in 1¼ and 1½-inch rigid conduit and pipe is announced by the Greenlee Tool Co.

This new bender, No. 1801, is designed to augment the Greenlee No. 1800 ratchet bender (for ½, ¾, and



1-inch sizes) previously introduced. Operation of the two units is identical, with short ratchet action for easier bending.

Features include an easily reached ratchet release, built-in bending gage for bending to specifications or making duplicate bends, and a pipe clamp that swings away for fast loading and unloading. The bender has a tee-iron base threaded for 1¼-inch pipe legs so that it can be bench or floor-mounted. The unit is easily transported and set up by one man.

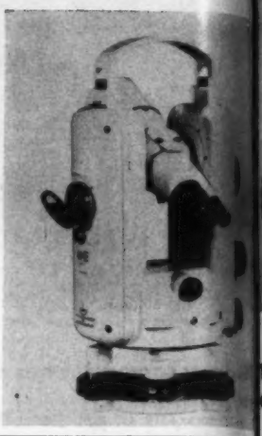
For further information write to the Greenlee Tool Co., Dept. C&E, 2136 12th St., Rockford, Ill., or use the Request Card at page 18. Circle No. 139.

New line of theodolites offers several features

A new line of theodolites is introduced by the Keuffel & Esser Co.

The units are offered in three models: KE-2, KE-1, and KE-6. Though designed to varying degrees of accuracy in reading and interpolation, all three offer these features: an erected image (optional); automatic indexing of the vertical circle; all control knobs on one side; clamps and tangent screws easily identified by feel; optical plummet built into the alidade; interchangeable accessories.

For further information write to the Keuffel & Esser Co., Dept. C&E, Adams and Third Sts., Hoboken, N. J., or use card at page 18. Circle No. 132.



READY FOR YOU NOW SYLGAB'S NEW CATALOG



SYLGAB products SAVE TIME TWICE

- Designed for instant installation... enables fast pouring due to their high rigidity.
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Sylgab Steel & Wire Accessories conform to the specifications of the Concrete Reinforcing Steel Institute.

Quality — Service
Ease of Installation

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STEEL & WIRE CORP.
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BEAM CLIPS • SPECIAL COLUMN CLIPS
EXPANSIBLE CLIPS
STRAIGHT AND COIL WIRE
HAIRPIN CLIPS • TOGGLE HANGERS
FORM SPACERS • BAR ACCESSORIES

For more facts, circle No. 459

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PACING THE PRESTRESSED INDUSTRY

One of the contributing factors to pioneers in any industry is the restless urgency to see around the next corner. WATCO subscribes to this policy. Depend on our young progressive engineering team to deliver the tough, tricky custom forms, often a deterrent to tight production schedules.

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For more facts, use Request Card at page 18 and circle No. 460

JERSEY SPREADER



...Gets the Job Done!

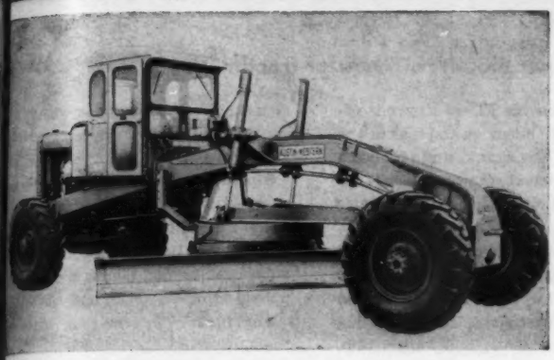
Whether it be on a major airbase, turnpike or city street, a Jersey Spreader gives low-cost, dependable performance . . . Big job or small, you always get your profit with a Jersey Spreader on the payroll. Fast and accurate, there's never a delay to hauling units. Models available to meet all requirements.

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Write now for complete information and illustrated literature.

TRACTOR SPREADER COMPANY
MANUFACTURERS OF THE JERSEY SPREADER
HASBROUCK HEIGHTS, NEW JERSEY 38-34

For more facts, use Request Card at page 18 and circle No. 461



The Pacer 400 features hydraulic operation and control of all working parts, including all blade movements. A 6-wheel machine, the Super 400, is also available.

Two new power graders are fully hydraulic

Two new power graders, the Pacer 400 and the Super 400, are available from Austin-Western.

Both machines have 143-hp engines and are in the 30,000-pound class.

The 4-wheel Pacer 400 has 4-wheel-drive; the Super 400 has 6-wheel-drive.

Other features include power steering at front and rear; power blade controls; power transmission (the optional Torcon torque converter is a single-element, 3-stage unit that gives 6 speeds forward and 2 reverse); and power shift.

Power is supplied by either the GMC-471 4-cylinder diesel or the Cummins C-160 6-cylinder diesel engine. There is a wide range of tire options and a variety of accessories.

For further information write to the Austin-Western Works, Baldwin-Lima-Hamilton Corp., Dept. C&E, Box 27, Aurora, Ill., or use the Request Card at page 18. Circle No. 115.

Cutting torch comes in three models

The Harris Calorific Co. announces a lightweight top-lever fitter's cutting torch.

Known as Model 42, this torch is said to be ideal for one-hand operation minimizing operator fatigue.

Efficiency is insured because the



injector mixer completely mixes the gases; this results in a fast starting preheat. There is no danger of backfire because the gases are mixed in the head.

This torch is available in three different models—for acetylene, propane, and low-pressure natural-gas cutting.

Cutting capacity is up to 8 inches, and a wide range of tips is available for gouging, rivet washing, rivet cutting, and thin-plate cutting.

For further information write to the Harris Calorific Co., Dept. C&E, 5490 Cass Ave. N. W., Cleveland, Ohio, or use the Request Card at page 18. Circle No. 19.



AT THE TOUCH OF A BUTTON

the Electrol GenerAC will supply shop-type electrical power from your truck, car or tractor — anytime, anyplace.

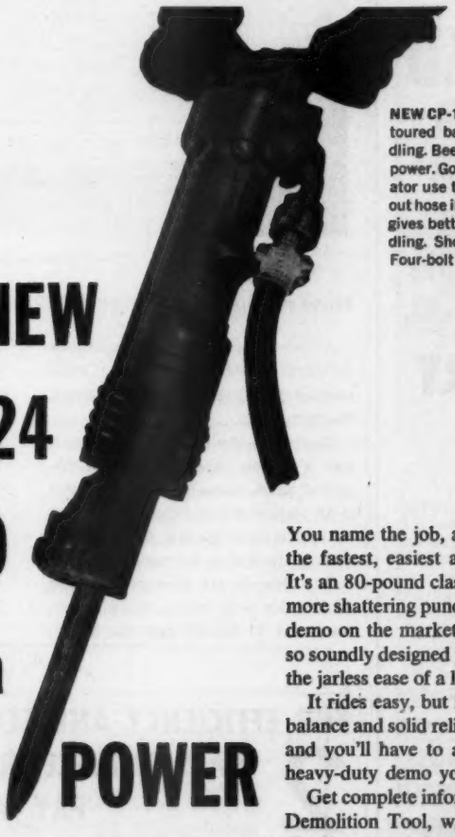
This high-output, 115/230-volt, 60-cycle alternator is available in a size for your every requirement.

Mounting is simple, with kits available for all popular makes of vehicles.

Write to

GenerAC Sales Inc. 124 S. Main Street Wales, Wisconsin

For more facts, use Request Card at page 18 and circle No. 462



NEW CP-124 DEMO has body-contoured backhead for easier handling. Beefed up muscle for prying power. Gooseneck swivel lets operator use tool in any position without hose interference. Short length gives better balance...easier handling. Shock-proof steel retainer. Four-bolt backhead.

NEW CP-124 DEMO makes a POINT of POWER

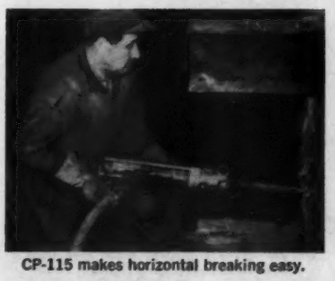
You name the job, and the "124" will give you the fastest, easiest action you've ever handled. It's an 80-pound class Demo, yes...but it packs more shattering punch per pound than any other demo on the market. It's so perfectly balanced, so soundly designed your men will handle it with the jarless ease of a lightweight tool.

It rides easy, but it hits hard! Unmatched for balance and solid reliability. Try out the CP-124, and you'll have to agree with us: it's the best heavy-duty demo you can get.

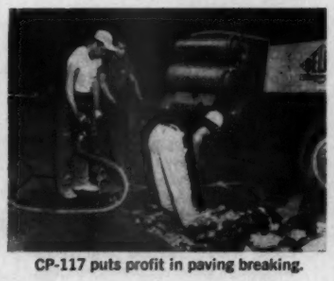
Get complete information on the New CP-124 Demolition Tool, write to your CP equipment distributor. Ask for a copy of SP-3260. *Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.*

Specify a CP Demo Tool and you're ready to lick ANY JOB...ANY TIME...ANYWHERE

These Service-Proved CP Demos are an industry standard.



CP-115 makes horizontal breaking easy.



CP-117 puts profit in paving breaking.



Lightweight CP-113 hits hard, handles safely.

Chicago Pneumatic 8 East 44th Street, New York 17, N. Y.

AIR COMPRESSORS • PNEUMATIC AND ELECTRIC TOOLS • AIR-BLAST BITS • REICHdrills • ROCK DRILLS

For more facts, use Request Card at page 18 and circle No. 463



The new Greenville hydraulic ripper for the Drott K-3 (4-in-1) mounts one, two, or three shanks. The ripper's hydraulic controls are self-contained.

New ripper mounts on crawler tractor

The Greenville TD-20 ripper is offered for mounting on the rear of the Drott K-3. The shanks and tool beam have sufficient clearance to permit the crawler to tow other equipment, states the manufacturer.

The ripper is equipped with 24-inch penetration curved shanks. Pitch and depth controls permit the operator to place and hold points at best ripping depth to the 24-inch maximum. Shanks swivel 15 degrees in either direction.

The tool beam is of reinforced, box-type construction equipped with bearing surfaces where swing brackets are attached. It is 102 inches wide.

The hydraulic system has a 44-gpm pump that operates from the power takeoff of the crawler.

All shanks have replaceable heavy-duty, heat-treated points, and can be pinned up when not in use.

For further information write the Greenville Steel Car Co., Dept. C&E, Greenville, Pa., or use the Request Card that is bound in at page 18. Circle No. 85.

CUT ROAD BUILDING COSTS with the CARVER LABORATORY PRESS



This versatile, hydraulic Press quickly repays its cost in all kinds of pressing tests. The testing of native materials for more economical Road-base construction is only one example of the possible savings through laboratory research with the Carver Laboratory Press.

Compact, self-contained, this press provides controlled pressures to 20,000 lbs. Interchangeable accessories are available for

• CRUSHING TESTS • BRIQUETTING
• BREAKING TESTS • SHEAR TESTS
• BENDING TESTS

FRED S. CARVER INC.
HYDRAULIC EQUIPMENT
7 CHATHAM ROAD, SUMMIT, N. J.

Send catalog, describing Carver Laboratory Press and Standard Accessories.

NAME .....
FIRM .....
ADDRESS 69

For more facts, use coupon or circle No. 464



The Leland low-bed trailer.

New equipment hauler has 25-ton capacity

A low-bed trailer with a specially designed rear-end ramp to facilitate loading is announced by the Leland Equipment Co.

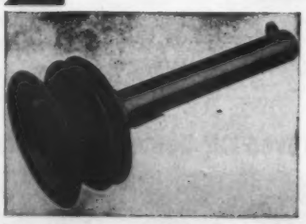
Known as Model TL-25D, the unit has a 25-ton capacity with 20,000-pound axles. Length of the platform is 13 feet; width is 8 feet; and overall length from the rear of the gooseneck to the end of the ramp is 23 feet.

The clear-length gooseneck on the new trailer is 80 inches, the king pin setting is 18 inches, and the length from the king pin to the end of the ramp is 30 feet 10 inches. Six optional side brackets may be added to extend the width of the unit to 10 feet.

The height of the platform with 9.00×15 tires is 38¾ inches, and the approximate weight of the unit is 9,800 pounds.

For further information write to the Leland Equipment Co., Dept. C&E, 408 N. Main, Tulsa, Okla., or use the Request Card that is bound in at page 18. Circle No. 37.

FOR EFFICIENCY AND ECONOMY . . .
2 WAYS TO MAKE CRANE OPERATIONS PAY MORE





1 RUD-o-MATIC
Combination Magnet Reel-Tagline

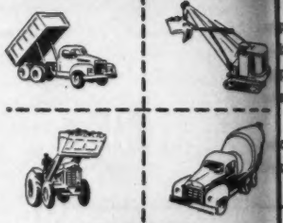
Rud-o-Matic Combination Magnet Reel-Tagline saves expensive electric cable wear on overhead and boom crane jobs. Tension on the steel tagline cable keeps the strain from the expensive electric magnet cable. Now standard equipment with major crane manufacturers, the Rud-o-Matic Combination Magnet Reel-Tagline is made in five models to fit your present equipment. Insure complete tagline control on *your* crane with Rud-o-Matic!

2 RUD-o-MATIC
Tagline

Crane operations are more profitable when you install Rud-o-Matic Taglines. Heavy duty torsion coil spring keeps tension on tagline cable at all times for bucket control. Buckets are held steady at any angle of the boom. Available in 11 models for various bucket sizes and pull out requirements. Taglines delivered fully equipped with fairlead and cable attached—ready to install. Get more pay loads per day with *your* crane with Rud-o-Matic Tagline Control!

FOR FULL INFORMATION ON RUD-O-MATIC TAGLINES, CALL OR WRITE
McCAFFREY-RUDDOCK TAGLINE CORP.
2131 EAST 25 STREET, LOS ANGELES 58, CALIFORNIA
For more facts, use Request Card at page 18 and circle No. 465

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INSTALL SERVIS RECORDERS



Servis Recorders permanently chart exactly when and how long equipment is busy and idle. Just bolt on this compact, and tamperproof instrument and it will write its own exact record of how long rental customers use your equipment.

Charts are recorded for weekly, daily or for three day periods depending on your needs. Servis Recorders will pay for themselves in no time.

Your rental customers will like it, too for the chart is completely accurate always dependable. Several states require Servis Recorders on their own and equipment they rent. Over-the-highway carriers have used them for years. Now *you* can buy them at low cost



Write today for our new "On-the-Highway Bulletin," or ask for the name of the closest S-R. He's qualified to solve your problems.

THE SERVICE RECORDER COMPANY
1015D ROCKWELL AVE., CLEVELAND 14, OHIO
For more facts, circle No. 466

With the Berry Sealcoater, the proper ratio of bonding material to the voids can be ascertained in a few feet.



Seal-coating machine in widths to 12 feet

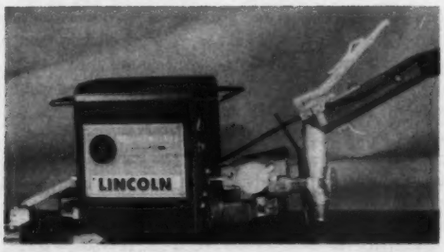
A seal-coating machine designed to place aggregate instantly in the bonding material, while the viscosity is still low, is available from the Berry Corp. There is no exposed asphalt, and surplus chips are held to a minimum, the company states.

The Sealcoater is truck-towed, and the capacity of the tank is rated to match the size of the dump truck used. The machine is offered in models to handle 8, 9, 10, and 12-foot widths, and any size can be used to cover a narrower strip.

According to the manufacturer, joints are made automatically to secure a continuous sealed and covered surface without bumps or skips.

For further information write to the Berry Corp., Dept. C&E, Stone Road, Lexington, Ky., or use the Request Card at page 18. Circle No. 123.

Trackless carriage for squirt welder



The Lincoln Electric Co. announces a self-propelled trackless carriage for operation in conjunction with its Model ML-3 mechanized squirt welder.

Called Squirtmobile, the unit supports, advances, and guides the welding gun along the joint, in effect producing full automatic submerged-arc welds.

Designed to produce long welds continuously, this compact 37-pound unit requires no supporting fixtures. The carriage travels on a pair of magnetized rollers at speeds ranging from 7 to 70 inches per minute.

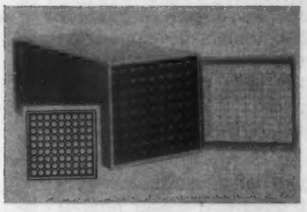
Various types of welds can be made with the Squirtmobile by adjusting the gun support to properly align the electrode with the joint.

For further information write to The Lincoln Electric Co., Dept. C&E, P. O. Box 3115, Cleveland 17, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 118.

File for rolled prints offered in 81-tube size

Quicker filing and finding of rolled prints, maps, and charts is said to be achieved with the new 81-tube Staktube file offered by the Stacor Equipment Co.

Each tube is steel rimmed and



measures 1½ inches ID. Drawings are located quickly by use of the file's outside label and a complete record on the inside of the hinged door.

For further information write to the Stacor Equipment Co., Dept. C&E, 295 Emmet St., Newark 5, N. J., or use the Request Card at page 18. Circle No. 22.

"THESE LUBRICANTS HAVE KEPT OUR MAINTENANCE AT A MINIMUM"



says: PIOMBO CONSTRUCTION CO. of San Carlos, California

"We have used LUBRIPLATE #107 in Track Roll Bearings, LUBRIPLATE #3 in Rock Drills, LUBRIPLATE #70 in Wheel Bearings and LUBRIPLATE 130A and LUBRIPLATE Gear Shield Heavy on our Shovels for the past twenty years. Our experience has been that LUBRIPLATE Lubricants have kept our lubrication and maintenance costs at a minimum. We highly recommend their use in construction and mobile equipment."

G. J. Giampaoli, Shop Superintendent

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.



For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.



For more facts, circle No. 468

GARRISON

POWER STEERING

Now available for

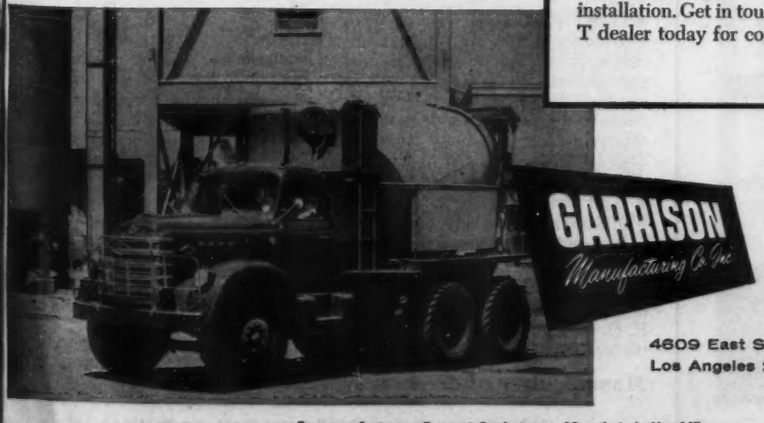
DIAMOND T TRUCKS

Models 830-42M, 730-32M, and 830-36M

Drivers say they like Diamond T Trucks because of their excellent ride, faster shifting and *easy steering*—thanks to Garrison Power Steering.

With hydraulic power doing 80% of the work of turning, drivers get rigs in and out in a hurry, with far less fatigue. Equipment takes less of a beating, too. Shocks from rough terrain are absorbed by the power cylinder—not the steering mechanism.

Garrison Power Steering is available for larger models of Diamond T Trucks and can be installed as optional equipment at the factory, or provided in kit form for field installation. Get in touch with your Diamond T dealer today for complete information.



Garrison Power Steering is available for most other makes and models of heavy and medium trucks, truck cranes, and wheeled material handling and off-the-road equipment.

4609 East Sheila Street
Los Angeles 22, California

For more facts, use Request Card at page 18 and circle No. 467

Offer wire-rope slings in high-strength series

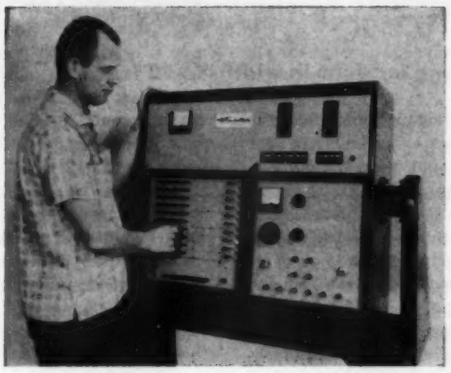
A new series of double green stripe, VHS Strand-Laid wire-rope slings has been announced by the American Chain & Cable Co., Inc.

All slings in the new series are said to be exceptionally strong and are equipped with Duoloc wire-rope endings for added safety. These streamlined endings do not damage the wire rope nor unbalance and destroy the rope structure like a hand splice or compression ending, states the manufacturer.

The slings are available in 20 different diameters ranging from ¼ inch to 3 inches. Vertical lifting capacity of the smallest sling is 1,350 pounds, while the largest is rated at 166,000 pounds. These slings can also be arranged as chokers, baskets, or bridle assemblies to accommodate varied loads.

For further information write to the American Chain & Cable Co., Inc., Dept. C&E, 929 Connecticut Ave., Bridgeport 2, Conn., or use the Request Card that is bound in at page 18. Circle No. 95.

Offer batching console for concrete production



On the new Noble console, up to ten different formulas of ten different materials can be preset in advance.

Selectron, a new, compact batching console featuring a simple system for presetting multiple formulas and operating batch plants remotely is announced by the Noble Co.

Up to ten different formulas of ten different materials can be preset in advance. Additional formulas in increments of ten are optional. According to the manufacturer, selection of formula or change from one formula to another is immediate.

Individual remote dials permit reading of up to eight corresponding dial scales on the batch deck. The manufacturer points out that this enables the console to be positioned remotely in the yard office, at the mixer-truck charging station, or at any other desired location.

The electronic components of the console are convenient subassemblies, easily interchangeable, and the all-transistorized elements are not affected by vibration.

The new console can be installed on existing concrete batching plants and easily maintained by the ready-mix producer or the contractor's own personnel. The standard unit is equipped with full batch-start and batch-dump interlocks.

For further information write to the Noble Co., Dept. C&E, P. O. Box 1979, Oakland, Calif., or use the Request Card at page 18. Circle No. 119.

Offset plowing harrow averages 14-inch cut

The Jobmaster Model DOK-10-36-B is available from Alexander Mfg. Co. Its uses include land clearing and breaking for highways, etc.

The 10-disk unit has an 8-foot 6-inch width of cut and an average cutting depth of 14 inches. Weight is approximately 10,000 pounds.

Other features include mechanical angle control and button-type pressure lubrication.

For further information write to the Alexander Mfg. Co., Dept. C&E, P. O. Box 407, Picayune, Miss., or use the Request Card at page 18. Circle No. 156.

TOP here's logic in the fact that the pioneer builders of low bed trailers developed the trailer that has set new high standards—in construction—in performance—and its surprisingly low price.

VALUE ersatility in ability to handle a sizable majority of loads that otherwise would require larger, heavier, more costly to operate units especially appeals to all contractors that have purchased this trailer.

TRAILER o make such a constructive contribution to heavy hauling required specialized knowledge gained through years of experience—exceptional manufacturing facilities—and large volume that permits cutting costs "to the bone" and passing the savings along to the purchasers—all Rogers advantages.

You can own a superior ROGERS for as little or less than an ordinary "off brand" trailer.

There's a capacity for you—15, 25 and 35 tons.

Write for the interesting revealing facts NOW —while the subject is on your mind.

ROGERS® TV TOP VALUE TRAILER



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For more facts, use Request Card at page 18 and circle No. 469

LOOK TO FLINTKOTE FOR JET FUEL RESISTANT PAVEMENT SEALERS...

Send today for complete specifications and technical data sheets on the following:

• **FLINTSEAL JFR*** (Hot poured) A one-component, rubber-tar thermoplastic compound to be melted and poured. Cools quickly, retains tough, elastic bond in pavement joints and cracks through cycles of expansion and contraction. Fed. Spec. SS-S-167b.

• **FLINTKOTE M-200** (Cold-Applied) Two-component, polymer type sealer. Sets quickly, resists aircraft fuel, heat and blast from jets. Bonds perfectly to concrete and remains ductile at minus 20°F. Interim Fed. Spec. SS-S-00200a and pertinent Purchase Descriptions, as modified.

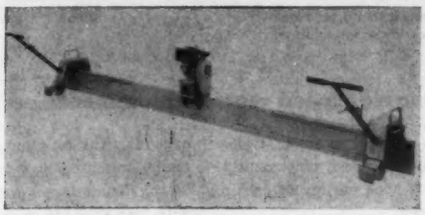
• Also ask about exciting new Flintcrete†—Flintkote's polysulfide/epoxy concrete bonding compound for pavement restoration and repair.
• And Flintar*/coal tar pitch emulsion. Fed. Spec. R-P-00355a for sealcoating bituminous pavements. Write: The Flintkote Company, P. O. Box 157, Whippany, New Jersey.

FLINTKOTE

*Reg. U.S. Pat. Off. †T.M. of The Flintkote Company

Manufacturer of diversified products for home and industry

For more facts, use Request Card at page 18 and circle No. 470



When mounted on a 16-foot beam, the vibrating unit can screed slabs of any width between 8 and 16 feet. The telescoping pull handles are adjustable for height.

Vibrating screed handles slabs to 16-foot width

The new Maginniss vibrating screed is said to produce uniform consolidation of concrete while striking off a smooth surface. The manufacturer states that it is useful in concreting floors, walks, airport aprons, bridge decks, ramps, streets, and on certain highway applications.

The assembly consists of a vibrating unit and a pair of end dollies. These can be mounted on a 2 or 3-inch × 6-inch wood beam up to 36 feet long. An 8-foot width adjustment of the dollies (4 feet on each end) is provided. Thus, when the unit is mounted on a 16-foot beam, it is possible to screed slabs of any width between 8 and 16 feet.

Power is supplied by a 2½-hp 4-cycle air-cooled gasoline engine.

Vibration frequency is variable (3,600 to 8,000 vpm).

The dolly rollers have removable flanges that permit them to travel on wide forms or concrete slabs.

For further information write to the Maginniss Power Tool Co., Dept. C&E, 154 Distl Ave., Mansfield, Ohio, or use the Request Card at page 18. Circle No. 75.

Diesel-fuel conditioner improves combustion

Diesel Pep, a combination of solvents, dispersants, special oils, and other ingredients specifically formulated to improve the performance of all types of diesel engines, is available from the Spray Products Corp.

According to the manufacturer, Diesel Pep will keep injectors, screens, filters, and fuel pumps clean; improve combustion; disperse water; and keep fuel lines open.

For further information write to the Spray Products Corp., Dept. C&E, P. O. Box 1988, Camden 1, N. J., or use the Request Card at page 18. Circle No. 148.



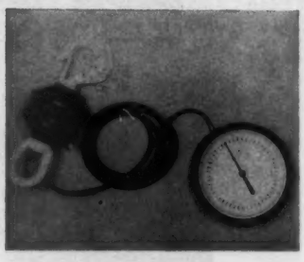
Indicating crane scale in capacities to 30 tons

The Martin-Decker remote indicating crane scale is designed to weigh and handle material in one operation.

With this system, the load element and the indicator are provided as separate units connected by up to 50 feet of flexible double wire braid hose. The load element can be raised by a crane hook to any reasonable height.

A special feature is automatic self-alignment under tension (up to 4 degrees misalignment will not affect indication). The unit also has a high safety factor, 360-degree calibration, and a 25 per cent tare adjustment.

The system is available in capacities from 1,000 to 60,000 pounds.



For further information write to the Martin-Decker Corp., Dept. C&E, 3431 Cherry Ave., Long Beach 7, Calif., or use the Request Card at page 18. Circle No. 6.



POWER TROWELS 6 models: 2 Hydra-Trowels, 4 manually-adjusted . . . for velvet smooth floor finishes.

COMPACTOR FLOATS 3 Compaction Control models . . . improve wear resistance and reduce installation costs of floors.

POWER TAMPERS 3 self-propelled models, 2700 impacts/min., to pack down earth backfill and finish blacktop.

POWER BUGGIES 10 Cu. Ft. capacity with hydraulic dump and dual-traction differential.

SPACE HEATERS 5 models: 75,000 to 450,000 B.t.u./Hr.—HEAT-ON-WHEELS.

KELLEY MACHINE DIVISION
285 Chicago Street Buffalo 4, New York

Please send me information on Kelley:

Name _____

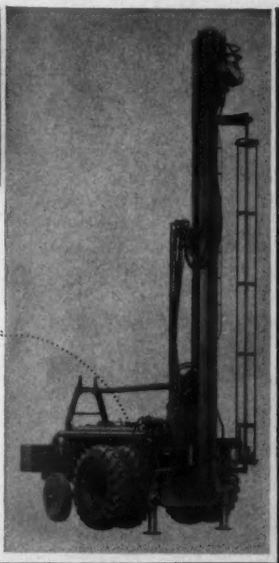
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City _____

State _____

For more facts, use coupon or Request Card at page 18 and circle No. 471

WHY THE FASTEST WAY TO CUT DRILLING COSTS IS... A SCHRAMM ROTADRILL



1 you switch to a modern self-contained self-powered unit

complete with a Schramm 125 cfm compressor

one man drills and drives

2 you save



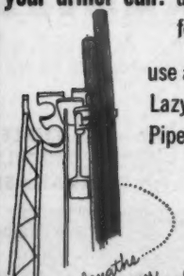
cost of separate tractor, compressor and wagon drill

3 and you save cost of extra man or men



4 your driller can: use a Schramm Rotatool for hard rock

use a Schramm Lazy Susan Pipe Holder



holds 3 lengths one man can change steels

600 blows a minute



drill bigger holes faster

○ ○ ○ ○ ... to 4½"

get wider spacing for lower cost rock removal

Get the full story of how the Schramm Model P-41 Rotadrill can cut your drilling costs. Write for Catalog and the name of your nearest dealer.

Schramm
ROTADRILLS and ROTATOOLS
762 North Garfield Ave., West Chester, Pa.

Schramm, Inc., manufacturers of Rotadrills (Pneumatractor Mounted, Truck Mounted, Crawler Mounted), Air Compressors (Portable, Stationary) Self-propelled Air Compressors (Pneumatractors) and Booster Compressors.

For more facts, use Request Card at page 18 and circle No. 472



The Ridley Model C-3VD shoots 18 to 20 tons of concrete per hour. Note the secondary mixer that is located over the gun.

Two new gun rigs speed concrete placement

Ridley & Co., Inc., announces two new rigs designed to speed placement of concrete in a wide variety of jobs and applications.

The new units, Model C3VM (truck-mounted) and C3TM (trailer-mounted), will shoot concrete at a rate of from 8 to 12 tph, employing a 365-cfm compressor. The same rigs are capable of shooting up to 18 tph when supplied with 600-cfm compression and premixed materials.

The C3VM and C3TM rigs are part of a new line ranging up to truck- trailer-mounted rigs that will shoot 20 tph. These larger rigs are provided with two primary mixers and a secondary mixer over the gun where batches are further blended for 3 to 4 minutes to provide optimum mixing at highest volumes.

All Ridley rigs employ the firm's C3 concrete gun.

For further information write to Ridley & Co., Inc., Dept. C&E, 2211 Pontius Ave., Los Angeles 64, Calif., or use the Request Card that is bound in at page 18 of this issue. Circle No. 170.

Offer concrete vibrator with one moving part

A new vibrator-generator combination consisting of an eccentric rotor concrete vibrator with only one moving part, and a brushless, bearingless, no-wear generator, is now available from the Master Vibrator Co.

The unit has a head diameter of 2⅝ inches with standard casings in 7, 14, and 21-foot lengths. Since the motor itself acts as the vibrating source, equal vibration occurs along the entire length of the vibrating head, moving concrete faster, and providing ample "kick" for low-slump concrete.

Optional equipment includes a wheelbarrow mount and an 11-pound supplementary power package that can furnish 1,000 watts of dc current.

For further information write to the Master Vibrator Co., Dept. C&E, 1752 Stanley Ave., Dayton 1, Ohio, or use the Request Card at page 18. Circle No. 45.

INGRAM

IN ACTION



3 WHEEL AND TANDEM ROLLERS

INGRAM 12 ton 3-wheel roller rolls hot coarse grade asphalt directly behind bituminous paver on North Loop 13, San Antonio, Texas.

INGRAM 8-12 ton tandem roller works in background.

Both rollers feature REVERS-O-MATIC Drive.

Acme IRON WORKS

CULEBRA AVE. AT EXPRESSWAY N. W.
P.O. BOX 2020 • SAN ANTONIO 6, TEXAS

AVAILABLE IN ALL SIZES

For more facts, use Request Card at page 18 and circle No. 473

DELMAG

LOW-COST OPERATION
DIESEL PILE HAMMERS

DELMAG Diesel Pile Hammers are light in weight yet develop tremendous energy per blow and have proven outstandingly successful under all weather conditions.

Requiring no costly "extras", DELMAG Diesel Pile Hammers are completely self-contained and weigh approximately one-half that of steam hammers of comparable energy rating. This results in a big saving on the size of handling equipment required and makes for a much more mobile pile driving operation.

SALES AND SERVICE
From Coast to Coast

Illustrated literature sent on request

THREE MODELS AVAILABLE:

D-5
9,100 ft. lbs.

D-12
22,500 ft. lbs.

D-22
39,700 ft. lbs.



The Foundation Equipment Corp., 700 Elizabeth St., Newcomerstown, Ohio · Marx Machinery Co., 988 Market St., San Francisco 2, Calif. · Andrews Machinery of Washington Inc., 3633 East Marginal Way, Seattle 4, Wash. · Special Construction Machines Ltd., 166 Bentworth Ave., Toronto 19, Ont.

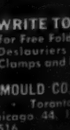
For more facts, use Request Card at page 18 and circle No. 474

DESLAURIERS
Econ-O-clamp
THE COLUMN CLAMP THAT WORKS LIKE A SQUARE





- CUTS COST
- SPEEDS FORMING
- STORES EASILY
- NO LOOSE PARTS
- FOR SALE OR RENT



Forms all square and rectangular columns 9" thru 36". Automatically squares columns.

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For more facts, circle No. 475

wo new rippers for tractor model

The American Tractor Equipment rp. offers two new models of Ateco avy-duty rock rippers for the Eu- d C6 tractor.

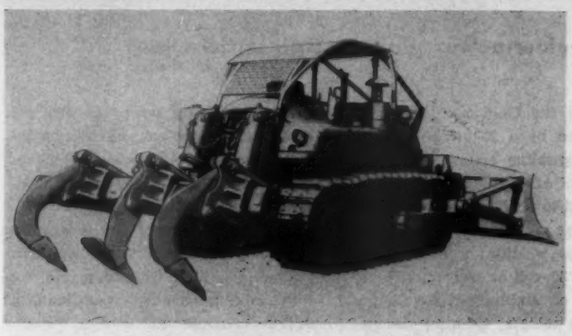
eatures and improvements in- de higher tool-beam clearance, aight line draft, larger hydraulic inders and rods, stronger connect- pins and hardened bushings, and ensive use of heat-treated alloy els.

The Model HR-C6 is equipped with ndard straight tool beam for rock d pavement ripping, subsoiling, and er work. The Model HR48-C6 fea- s a "pipeline" tool beam, which es the center shank 20 inches k of the straight beam position, viding a 48-inch lift to accommo- date special long shanks for pipeline or cable-laying operations.

Both models handle one, two, or three shanks (straight or curved) for digging depths of 25, 42, or 48 inches.

The ripper weight has been designed to balance the front dozer weight for most efficient traction, and positive hydraulic down-pressure adds tractor weight to the shanks for fast, deep penetration. Swivel-mounted shanks provide easy steering even while ripping at full depth, states the manufacturer.

For further information write to the American Tractor Equipment Corp., Dept. C&E, 9131 San Leandro Blvd., Oakland, Calif., or use the Request Card at page 18. Circle No. 155.



One of the two new rock rippers designed for Euclid C6 tractors, this Ateco Model HR-C6 is equipped with a standard straight tool beam.

oil-permeability device tests sands, gravels

An improved instrument for use in ils and aggregate laboratories for t determinations of permeability d for observation of quicksand enomena has been announced by iltest, Inc.

Called the plastic permeameter, the vice can be used for tests on sands, avels, or mixtures of both. It can o be used effectively for small-scale ts on graded filters for dams, filtration plants, and drains.

The transparent plastic construction enables the operator to observe the soil and water flow during the test.

The permeameter tank has a 2½-inch internal diameter and accommodates a 10-inch-high specimen.

For further information write to Soiltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the card at page 18. Circle No. 93.



Long-hole drilling made easier— *more profitable with* ROPE thread BRUNNER & LAY tools

If it's deeper holes you are after, you can't buy more productive tools than the rope-thread Brunner & Lay assembly . . . carbide Rok-Bits, Couplings, Carbo-Rok Sectional Rods, Striking Bars—everything from chuck to muck.

Solid rope thread connections ensure greater rod rigidity for deeper drilling. Easy hand uncoupling. An unbeatable drilling unit designed and made to work together. Request complete catalog #759 from your local Brunner & Lay dealer, or our nearest plant.

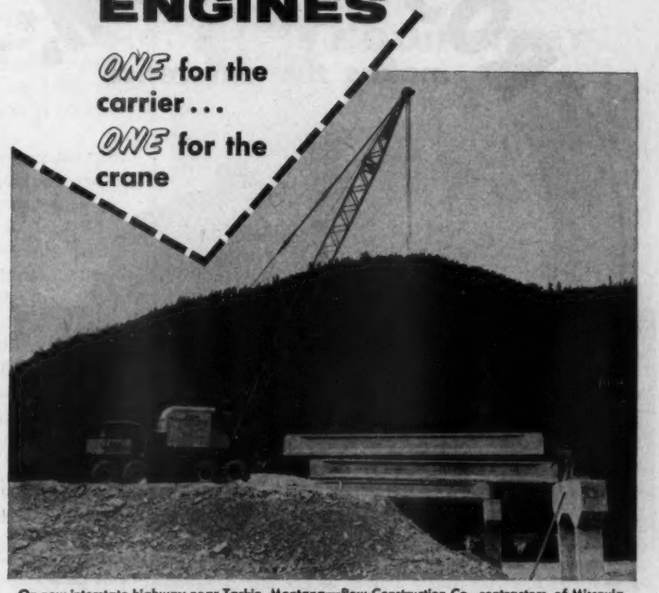
Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill. *Est. 1882.* Plants & conversion shops: Albuquerque, Asheville, Birmingham, Dallas, Dorchester (Boston), Long Island City, Los Angeles, Philadelphia, Sacramento, Seattle, Yardley (Spokane), Lachine, Que.

Brunner & Lay CARBIDE ROK-BITS • DRILL RODS
ENTRANCE STEEL • COUPLINGS, ADAPTERS, SECTIONAL STEEL, STRIKING BARS • STANDARD OR ROPE THREADS • MOIL POINTS, CLAY SPADES, ASPHALT CUTTERS, ETC.

For more facts, use Request Card at page 18 and circle No. 476

TWO **WAUKESHA ENGINES**

ONE for the carrier . . .
ONE for the crane



On new interstate highway near Tarkio, Montana—Pew Construction Co., contractors, of Missoula, Montana, are building overpasses for the Montana Highway Department, using an MC-530W Lorain truck-crane with two Waukesha Engines.

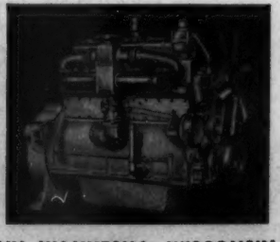
Setting prestressed concrete beams—40 to 45 ft. long, weighing 10½ to 12½ tons each — constructing highway-over-highway overpasses! And, lifting these beams on a radius of 32 ft., with a 65 ft. beam, the Lorain truck-crane did the job handily. Its crane engine, a Waukesha gasoline 135-GZB, has the sheer lifting power, and the quickly responsive, smooth power for maneuvering, with reserve power when needed. The carrier engine, a Waukesha gasoline 145-GKB, "has lots of power for the road" says the crane operator.

Send for Engine Bulletins.

Powering the Carrier—145-GKB Waukesha Gasoline, 5¼-in bore x 6-in. stroke, 779 cu. in. displacement. Max. hp 240 @ 2400 rpm.

Powering Crane (boom) 135-GZB Waukesha Gasoline, 4⅜-in. bore x 5-in. stroke, 451 cu. in. displacement. Max. hp 153 @ 2800 rpm.





WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
NEW YORK TULSA LOS ANGELES
Factories — Waukesha, Wisconsin, and Clinton, Iowa 485

For more facts, use Request Card at page 18 and circle No. 477

Ac/dc welder-power plant can do various jobs

Featuring the Gold Star rectifier, and powered by a 25-hp 2-cylinder air-cooled gasoline engine, the new Miller Model AD-225-L welder-power plant is said to perform the following functions: ac and dc welding; metallic inert-gas welding; generating 7 kw of 115/230-volt ac power; supplying 1 kw of auxiliary 115-volt dc power while welding; warming viscous fluids for pumping and thawing frozen pipes; battery charging and battery boosting.

This lightweight unit delivers 300 amp at 30 volts ac or 225 amp at 30 volts dc welding power at 100 per cent duty cycle. Open circuits of 75-volt ac and 65-volt dc assure excellent results with ac, dc, or ac-dc electrodes.

A complete range of accessories and optional equipment is available, including a high-frequency unit for TIG process welding, road trailers, remote controls, and others.

For further information write to the Miller Electric Mfg. Co., Inc., Dept. C&E, 718 S. Bounds St., Appleton, Wis., or use the Request Card at page 18. Circle No. 5.



The Miller Model AD-225-L welder-power plant handles a wide range of jobs

ROSCO'S P.M.*
makes the difference



Applying bitumen through 2 feet of spraybar as shown may not appear unusual or different, but when the operator can use any length—from 1 to 24 feet—*without changing the pressure* and *without any application adjustment whatever* . . . then there's a difference. It's *Rosco's Pressure Metering Method* that makes that difference.

***P. M. =**
Pressure Metering

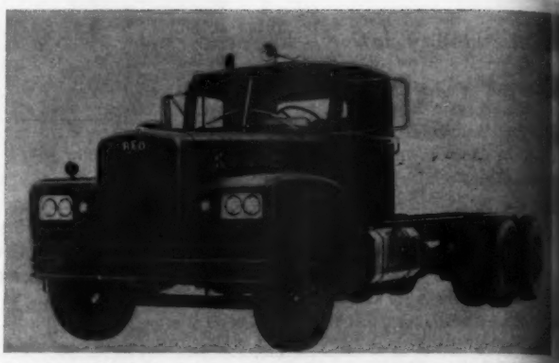
The P. M. method of applying bitumen is *not* metered by the bituminous pump, nor is the amount of discharge measured in relation to the pump revolutions. Normal wear of the pump and occasional, unavoidable nozzle clogging never affect the application rate. Here again, Pressure Metering *makes the difference* . . . the rate is automatically maintained by Rosco's P. M. system.

It is this Pressure Metering Master Valve, the "heart" of Rosco Distributors, that gives you this built-in control of pressure which is the only accurate method of obtaining precise bituminous application. This is the valve that also directs the flow of material for all of the Rosco Distributor functions.

Make the difference pay off. Let your Rosco dealer show you how. Write the factory for descriptive bulletins with specifications of Distributors with P. M.

Rosco
MINNEAPOLIS
DISTRIBUTORS
MAINTAINERS
BROOMS
SUPPLY TANKS
TAR KETTLES
STREET FLUSHERS

For more facts, use Request Card at page 18 and circle No. 478



The ten models in Reo's new E Series feature gvw ratings from 31,000 to 60,000 pounds with both single and tandem axles.

Diesel truck-tractors in ten new models

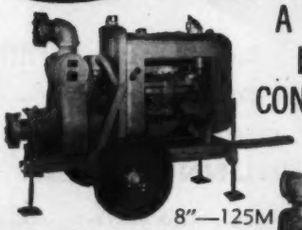
The Reo Division of the White Motor Co. announces a new line of diesel-powered tractors.

Designated E Series, it includes ten models with gvw's from 31,000 to 60,000 pounds with both single and tandem axles.

All models have Cummins diesel engines with horsepower ratings from 180 to 262.

For further information write the Reo Division, The White Motor Co., Dept. C&E, Washington Ave., Lansing 20, Mich., or use the Request Card that is bound in at page 18. Circle No. 8.

RICE RICE PUMPS
A Complete Line for CONTRACTORS



6"—90M
8"—125M



CENTRIFUGALS
All Standard AGC Sizes 1½" to 10"
Air and water cooled power—Modern Design—Precision built.

DIAPHRAGMS
2", 3", 4" SINGLES
BIG 4" DOUBLE
Single and double styles—48 to 1 reduction—gearing fully enclosed and operates in oil.

MASONRY CUTTERS
12 and 30 Ton Sizes

RICE Pump & Machine Co.
BELGIUM, WISCONSIN
FACTORY BRANCH — W. 41 Ridgewood Ave., Paramus, N. J.

For more facts, use Request Card at page 18 and circle No. 479

...e history

...ficient trench work speeds large sewer job

...fficient contractor equipment and ...thods are helping to set a fast ...e on a major sewer construction ... in Houston, Texas.

...Russ Mitchell, Inc., a Houston firm ...h a long record of specialized ...nch work, is building a 120-inch-... concrete storm sewer in a 30-foot-... trench. And despite very hard ... soil, Mitchell is maintaining a ...duction of 50 feet a day.

The company's $700,000 contract ...h the city of Houston calls for ...nstruction of the mile-long Scott ...eet storm sewer. The huge con-...te sewer is being placed monolithi-...ly in a trench averaging 8 feet ...de. Throughout their length and depth, trench walls are supported by MP-115 steel-sheet piling rented from the Houston office of the L. B. Foster Co.

Trench work is spearheaded by an Austin 600 ditcher, remodeled and enlarged by Mitchell, that excavates full trench width and depth in one pass. Excavated material is hauled away by truck.

Directly behind the ditching operation, two Koehring cranes quickly handle the setting and driving of sheet piling. One crane "sticks" sheets, and the other drives them with a McKiernan-Terry 9-B-3 hammer riding a spud lead. The hammer is powered by a Schramm supercharged 600-cfm compressor.



The crane at left is one of the two Koehring units used to install the sheet piling. Air for the McKiernan-Terry hammer (right) is supplied by a Schramm compressor.

To help align and plumb piling, a panel of piles is maintained on each side of the trench just behind the ditcher. Sheet piles are added to the front of panels and driven at the rear end.

Three levels of 10×12-inch and 12×12-inch timber wales and struts are installed as soon as possible to assure safety of the trench. To facilitate handling, wales are fitted with chains, which also serve to tie bracing to sheet piles.

Following closely behind pile driving, a second crew places concrete for the 120-inch-diameter sewer. Ready-mix concrete is chuted into 8-inch rubber elephant trunks that distribute mix around steel forms. Designed and built by Mitchell, these forms are easily collapsed and re-used.

For further information write to the L. B. Foster Co., Inc., Dept. C&E, P. O. Box 1647, Pittsburgh, Pa., or use the Request Card at page 18. Circle No. 166.

Universal Atlas news

■ W. O. Lawrence, assistant vice president of Universal Atlas Cement, division of U. S. Steel Corp., New York, N. Y., has been assigned to direct and coordinate the purchasing division, raw materials and manufacturing research division, quality and technical services division, and the research laboratories.

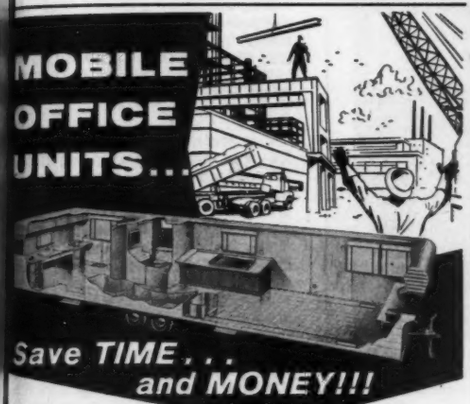
Clayton L. Davis, former technical service director, is now director of the quality and technical services division; and Arthur Horen, previously assistant director of research, is director of the raw materials and manufacturing research division.

Husco expanding

■ Hydraulic Unit Specialties Co., Waukesha, Wis., recently expanded its factory space for the third time within a year. The new addition provides toolroom facilities and a laboratory. The company produces Husco hydraulic controls.

Capitol chooses veep

Charles M. Bingham, chief engineer of the highways and airfields divisions, Capitol Engineering Corp., Dillsburg, Pa., has been elected vice president of the company.



MOBILE OFFICE Units are low in cost . . . Built to your specifications . . . There's a unit to fit your every need.

Because MOBILE OFFICE Units are easy to move from job to job, they enable you to have office, engineering, paymaster and other facilities at every point of your operation.

These units are economical, time saving, rugged and durable. They are self-containing, and are available with air-conditioning, and can be fitted to your specifications.

MOBILE OFFICES are being used by major contractors and other major businesses throughout the United States. In every case they have proven their worth.

Remember, whatever your needs may be, a MOBILE OFFICE Unit can be built to fit your requirements.

If It's Mobile . . . We Build It!

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For more facts, circle No. 480

CONTINENTAL
RED SEALS
ARE ENGINEERED
TO FIT THE JOB







Rarely will you find an item of industrial, construction or road building equipment that won't run best and cheapest on Continental Red Seal power. The reason lies in specialization—in Continental's long-standing policy of engineering each model precisely to the work to be done. Whatever the machine . . . whatever its job . . . you can bank on it for abundant power at the speeds consistent with low fuel and upkeep cost.

●

Continental's ruggedness and rightness of design are helping to build prestige for more and more of the leading builders of specialized power equipment. It's wise when buying equipment of this type, to choose a make with dependable Red Seal power—power backed by specialized experience dating from 1902.

●

FACTORY-APPROVED PARTS AND SERVICE EVERYWHERE

Continental Motors Corporation
MUSKEGON MICHIGAN

For more facts, circle No. 481

For Better Highway Turf Maintenance...

ENGINEERS INSIST ON
FIELD-PROVEN
Ryan EQUIPMENT

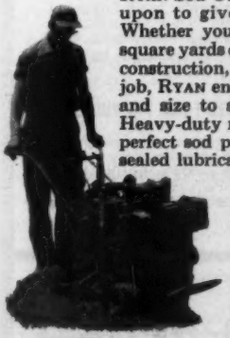


Engineers responsible for maintenance of right-of-ways, median strips, boulevards, parkways and other large grass areas insist on proved equipment that will do the job fast, efficiently, and without costly breakdowns.

They choose the RYAN RENOVAIRE to aerate turf damaged by winter-kill, erosion, and over-compaction. This ruggedly constructed renovator opens thousands of small holes in the soil to permit water, air, and fertilizer to reach the root zone. This cultivating action ensures maximum water penetration, encourages deep root growth and, consequently, prevents soil erosion.

Two tractor-drawn models are available. Both the 54" and the 96" sizes have individually suspended aerating wheels that hug the ground, regardless of its contour. Operating speeds up to 10 M.P.H. can be safely maintained. For maximum versatility, three styles of aerifying and cultivating tines are available. A hydraulic pump quickly raises aerating wheels to transport height for fast movement from job to job.

SOD CUTTERS



RYAN Sod Cutters can always be depended upon to give satisfactory performance. Whether your job calls for thousands of square yards of sod for highway or industrial construction, or just an occasional repair job, RYAN engineers have designed a model and size to suit your exact requirements. Heavy-duty models cut up to 300 sq. ft. of perfect sod per minute. Automatic cut-off, sealed lubrication, two-speed transmission, fingertip controls and, perfect balance are just some of the features that make the RYAN Sod Cutter the unquestioned leader in the industry.

Write for full particulars on these and other RYAN products and name of the nearest RYAN distributor.

Ryan LANDSCAPING EQUIPMENT COMPANY
871 EDGERTON STREET • ST. PAUL 1, MINNESOTA

For more facts, circle No. 482

Product LITERATURE

To obtain free copies of any of the literature described in the following section, circle the designated number on the Request Card at page 1

Motorized wheel drive—literature describing the construction and operating characteristics of GE's motorized wheel drive for off-highway vehicles. The new drive consists of a motor and simple gear arrangement that drives the wheel. The entire motor is mounted within the rim and is bolted to the side of the vehicle, completely eliminating the need for axles, transmissions, differentials, and drive shafts. According to the bulletin, electric power for these motorized wheels is normally supplied by an engine-driven generator.

Write to the Locomotive & Car Equipment Dept., General Electric Co., Dept. C&E, Erie, Pa., or use the Request Card at page 18. Circle No. 88.

Steam cleaners—a bulletin describing the complete line of Upgrader steam cleaners. Details and specifications cover four basic models with capacities of 100, 200, 750, and 1,500 gph of hot cleaning solution. Bulletin No. 4008.

Write to the Vapor Heating Corp., Dept. C&E, 80 E. Jackson Blvd., Chicago 4, Ill., or use the Request Card at page 18. Circle No. 175.

Hydraulic cranes, jacks—a folder describing Blackhawk portable lifting equipment and hydraulic tools. Gives specifications for hand jacks with capacities from 1½ to 100 tons, and for mechanical jacks with 10 to 75-ton capacities. Also covers four models of portable cranes, as well as components for a variety of hydraulic tools. Catalog L-100S.

Write to the Blackhawk Industrial Division, Blackhawk Mfg. Co., Dept. C&E, 13320 W. Reichert Place, Butler, Wis., or use the Request Card that is bound in at page 18 of this issue. Circle No. 147.

Measuring wheel—literature describing the Rolatape Model measuring wheel designed to accurately measure distances, in from zero up to nearly 19 miles. The device can be safely operated from car window at slow speeds, with face of the counter in plain view all times.

Write to Rolatape, Inc., Dept. C&E, 1741 14th St., Santa Monica, Calif., or use the Request Card at page 18. Circle No. 124.

Welding electrodes—a comprehensive, well illustrated catalog covering the complete Hobart line of welding electrodes, gas welding rods, nonconsumable electrodes, submerged-arc welding flux, and automatic welding wire. Handy application diagram. Catalog EW-212.

Write to the Hobart Bros. Co., Dept. C&E, Box 8129, Troy, Ohio, or use the card at page 18. Circle No. 179.

Concrete-mixer trucks—a booklet on concrete-mixer application data. Designed to serve as a guide and reference source for selecting truck models and other equipment to fit specific job requirements. Covers the various types of mixer bodies and drives, weight distribution, facts on mixer-body operation, truck-mixer application charts, major mixer body specifications, tandem specification data, and truck selection procedures. Also contains detailed specifications on Ford's line of industrial engines.

Write to the Ford Division, Ford Motor Co., Dept. C&E, P. O. Box 60[illegible], Dearborn, Mich., or use the Request Card at page 18. Circle No. 177.

Small tandem rollers—a bulletin describing the operating and construction features of Galion's 3 to 5-ton and 4 to 6-ton variable-weight tandem rollers. Also describes a pneumatic-tire towing attachment for the 3 to 5-ton unit. Emphasizes features of the Roll-O-Matic torque-converter drive and gives compression data and complete specifications. Bulletin No. 435.

Write to The Galion Iron Works Mfg. Co., Dept. C&E, Galion, Ohio, or use the Request Card at page 18. Circle No. 178.

Crane-excavator—a catalog on the Insley ½-cubic-yard Type [illegible] crawler-mounted crane-excavator. Specifications, working ranges, lifting capacities given. Numerous photos illustrate design details of upper works and crawlers. Catalog No. 160-3.

Write to the Insley Mfg. Corp., Dept. C&E, P. O. Box 167, Indianapolis, Ind., or use the Request Card at page 18. Circle No. 176.

Testing apparatus—literature on Testlab equipment for testing soils and bituminous, concrete, and other materials. Photographs, brief specifications, data on prices. Digest No. 2.

Write to the Testlab Corp., Dept. C&E, 250 W. 57th St., New York 19, N. Y., or use the Request Card at page 18. Circle No. 180.

Masonry cement—a catalog on the benefits of Atlas masonry cement. Contains information on the composition, properties, and characteristics of the cement, plus helpful sections on recommended masonry practice and workmanship. Up-to-date reference tables list mortar mixes and material quantities required for masonry construction. A section is devoted to the new shapes, sizes and textures of concrete block now available.

Write to the Universal Atlas Cement Division, U. S. Steel Corp., Dept. C&E, 100 Park Ave., New York 17, N. Y., or use the Request Card at page 18. Circle No. 24.

BUILD HIGHWAYS THE ROME WAY



MIXING AND BLENDING. Rome Model TRCH 10-36 Hinge Type Offset Disk Plowing Harrow cuts up to 13" deep for low cost mixing, blending, bonding lifts.



AERATING. Rome Model TRH 20-30 Hinge Type Offset weighs over 9,000 lbs.—heavy duty construction for less maintenance, longer life.



PULVERIZING AND LEVELING. Rome Model TCW 40-24 Wheel Type Offset cuts 15' wide—has rubber tire transport for easy turns, transport, accurate depth control.

TOUGH, VERSATILE AND MONEY SAVING. Rome Disk Plowing Harrows are available in many sizes and types. For aerating, mixing, scarifying, pulverizing—there's a ROME for your job, your equipment. See your Rome-Caterpillar dealer.

ROME.

ROME PLOW COMPANY
Cedartown, Georgia



For more facts, use Request Card at page 18 and circle No. 483



YOUR CHOICE... HYDRAULIC OR SCREW FEED TO RAISE AND LOWER BLADE

Direct chain drive self propulsion. 37 H.P. — 25 H.P. models. Front swivel wheel. Dual front pointer. Double end spindle and dual blade guards for right or left side cutting.



DIAMOND AND ABRASIVE BLADES FOR CONCRETE CUTTING

Champion offers both patented tungsten carbide bonded diamond blades and "Super Sintered" Con-Flex abrasive blades in a wide range of specifications to meet every application.



CONCRETE FORM PIN PULLER

America's lowest priced pin puller. One-man operation. Easy to move and maneuver. Fast positive vertical pull. Pulls 12 to 20 pins of any length per minute. 9 H.P. gasoline engine.

Champion MFG. CO.
3700 Forest Park Ave., St. Louis 8, Missouri
JEfferson 1-6688

Masonry Saws and Blades • Concrete Saws and Blades • Concrete Form Pin Pullers • Portable Spraying Machines • Concrete Vibrators • Concrete Trowelors • Portable Space Heaters

NOTICE!

Dealerships available in some areas. Write or phone for information.

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The BURCH Force Feed SPREADER

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ippers—an illustrated brochure ing construction details and op- ion of rear-mounted hydraulic- operated rippers for the Cater- r D9, D8, D6, and D4 tractors for No. 977 and No. 955 Trax- tors. Form No. 33557. rite to the Caterpillar Tractor Dept. C&E, Peoria, Ill., or use the uest Card at page 18. Circle No.

oncrete admixture—a booklet ribing Placewel, a liquid water- cing agent with or without air ainment, which, when added to rete, is said to produce outstand- properties in the plastic or hard- state. Lists results of many field laboratory tests. rite to Johns-Manville, Celite Di- n, Dept. C&E, 22 E. 40th St., New k 16, N. Y., or use the Request that is bound in at page 18. le No. 36.

lectric plants—a folder listing entire Onan line of gasoline-en- -driven electric generating plants. each series of plants (both air water-cooled) in detail and gives ifications for engine, generator, controls. Folder F-145. rite to D. W. Onan & Sons, Inc., C&E, 2515 University Ave. S. Minneapolis 14, Minn., or use the uest Card at page 18. Circle No.

ydraulic dredges—a bulletin on kum hydraulic dredges in sizes 6 through 30 inches. Detailed rmation on chain cutter ladders, y cutter ladders, sectional steel , and dredge and material-han- pumps. Photographs and draw- illustrate text. Bulletin No. 400. rite to Meckum Engineering, Inc., C&E, Dayton Road, Ottawa, Ill., e the Request Card that is bound at page 18 of this issue. Circle 184.

Truck-mounted derrick — a let on the Truco turret derrick truck mounting. Describes the as three tools in one: a derrick, a rful digger, and an aerial lift. ludes complete specifications and parative-capacity charts. rite to the Truck Equipment Co., t. C&E, 3963 Walnut St., Den- 5, Colo., or use the Request Card t is bound in at page 18. Circle No.

Tilt-cab diesels—a brochure on the Diamond T 931C Series tilt-cab diesels. Contains a complete illustrated description of the series, plus specifications.

Write to the Diamond T Motor Truck Co., Dept. C&E, 4401 W. 26th St., Chicago 23, Ill., or use the Request Card at page 18. Circle No. 186.

Masonry drills, saws—literature on Truco diamond drilling machines; diamond drill bits and accessories; concrete, masonry, and stone saws; and diamond blades. Illustrations and specifications. Hints on how to reduce drilling costs.

Write to the Truco Masonry Drilling Division, Wheel Trueing Tool Co., Dept. C&E, 3200 W. Davison, Detroit 38, Mich., or use the Request Card at page 18. Circle No. 187.

Transit-mixer diesel—a brochure detailing the construction and operating characteristics of the Sheppard Model 19B diesel engine designed especially for use on transit mixers. Photos, cutaway drawings illustrate text.

Write to the R. H. Sheppard Co., Inc., Dept. C&E, 47 Middle St., Hanover, Pa., or use the Request Card at page 18. Circle No. 188.

Rock bits—a bulletin on Joy tungsten-carbide rock bits. Bottom-drive, shoulder-drive, and taper-socket bits are illustrated and explained. A simple chart provides selection data for all types of bits made by the company and includes information on cross and X-type bits, diameters, and thread types. Bulletin NR-87-C.

Write to the Joy Mfg. Co., Dept. C&E, 333 Henry W. Oliver Bldg., Pittsburgh 22, Pa., or use the Request Card that is bound in at page 18. Circle No. 189.

Rear dumper—a catalog describing the new International Model 95 Payhauler, a 27-ton rear-dump off-highway truck. Describes the body design, which trims gvw by 5,000 pounds, and covers such features as the power train, main-frame and support members, Torqmatic brake, and enclosed power-steering system. Catalog CR-743-I.

Write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 190.

Motor-vehicle registrations in the United States during 1959 totaled 71,502,394. This is a gain of 3 million vehicles over 1958 registrations, an increase of 4.3

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Manufacturers Memos



Byron K. Hartman, president of Syntron Co.

Byron K. Hartman is the new president of **Syntron Co.**, Homer City, Pa. He succeeds **Carl S. Weyandt**, one of the company's founders, who has retired. Hartman was associated with the Link-Belt Co., of which Syntron is a subsidiary, for 21 years. He joined Syntron in 1959.

J. M. Crockett has been named vice president-gases of Air Reduction Sales Co., a division of **Air Reduction Co., Inc.**, New York, N. Y. He will handle the production and distribution of the company's complete line of industrial gases.

The **U. S. Steel Corp.**, New York, N. Y., has appointed **John L. Young** as vice president of engineering technology. He will be concerned with foreign and domestic engineering developments. The appropriations activities he previously directed are being consolidated under **J. D. Rollins**, the new vice president of facility planning and appropriations.

The engineering department has appointed three assistant vice presidents. **J. Robert Ferguson, Jr.**, is the new assistant vice president of design and construction. The post he held until now, assistant vice president of appropriations, is assumed by **P. S. Weaver**, previously chief engineer of project development. **Samuel Naismith** has been named assistant vice president of facility planning.

Worthington Corp., Harrison, N. J., has appointed **C. F. Hendrie** utility consultant for steam-power products. He will concentrate on field sales.

J. R. Matullo has been made manager of steam-power sales. He has served as district office manager at Newark since 1956.



Thomas J. M... New York ... manager ... Eimco Tract... vision, Eimco ...

The Eimco Tractor Division ... **Eimco Corp.**, Salt Lake City, ... has appointed **Thomas J. ...** sales manager for the New York ... trict. His territory will cover ... northeastern United States.



H. N. Cottingh... president and ... eral manager ... the Diamo... Chain Co.

H. N. Cottingham has been elec... president and general manager of ... **Diamond Chain Co.**, Indianap... Ind., succeeding **G. E. Schleet** who ... retired. **B. K. Sollars** is taking ov... Cottingham's post as assistant g... eral manager, and **F. R. Gray** will ... place Sollars as factory manager.



W. R. Timken, president of the Timken Roller Bearing Co.

The newly elected president ... the **Timken Roller Bearing Co.**, Ca... ton, Ohio, is **W. R. Timken**, acti... president since March. **D. A. B...** mer, the former president, resigne... because of ill health.

Three men were elected to the co... pany's board of directors: the se... retary-treasurer, **G. L. Deal**; the vi... president in charge of sales, **P. ... Reeves**; and the vice president ... charge of the manufacturing, ... ing, and rock-bit divisions, ... **Tobey.**

The board of directors of **The T... Shovel Co.**, Lorain, Ohio, has ... elected the following officers: **C. ... Smythe**, president; **A. W. Smy...** vice president and general manag... **E. C. Brekelbaum**, vice president ... assistant general manager; **W... Clark**, secretary-treasurer; **Will... W. Blauvelt**, controller; and **Ralph ... Reynolds**, assistant treasurer.

A branch office has been opened ... St. Petersburg, Fla., by **William ... Schuelle & Co.**, New York, N. Y., ... manufacturers' representative ... highway, airport, and road build... equipment. The office will handle ... Latin American business of the com... pany and clients arriving at Mia... and Tampa International Airports.

This branch will also cover the ... counties of southwest Florida, offe... ing complete lines of specialized bi... minous-paving equipment, with en... neering and consulting services.

NEXT MONTH in CONTRACTORS and ENGINEERS

From the many staff-written feature articles by our field editors:

SITE DEWATERED FOR SEWAGE PLANT CONCRETE POURS

Building a sewage treatment plant in a large southeastern city required a comprehensive dewatering system, and intricate forming for its concrete construction.

DOUBLE-JOINTING ADDS SPEED TO PIPELINE PROJECT

Laying a 30-inch gas main, part of a 335-mile section in the Southwest, in which 40-foot pipe lengths were welded together in the shop to make 80-foot double joints.

NEW TRICKS WITH SHEET PILES ON TOUGH TRI-LEVEL BRIDGE

Construction of a three-level grade separation in a midwest metropolis where a 3-track railroad and a 4-lane city street angle across a depressed expressway.

From our construction consultant, George E. Deatherage, P.E.:

A management article with advice to highway contractors on such public relations topics as permits, detours, use of explosives, preservation of property, and responsibility for damages and claims.

From our legal counsel, A. L. H. Street, answers to such varied problems as:

Eligibility for unemployment insurance of a contractor's union employees who refuse to cross a picket line of another union.

Liability of a contractor for damages resulting from the vibrations produced in the driving of piles.

Rights of a contractor in using a borrow pit that the state intended to acquire for a lakeshore development.

From our Washington correspondent, E. E. Halmos, Jr.:

The latest news from the nation's capital pertaining to the construction industry as it is affected by the federal government.

Plus such regular features as:

BUSINESS COMMENT • INDUSTRY TRENDS • LABOR REVIEW

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Distributor Doings

B-L-H appoints three

M. L. Baxter Ltd., 1900 St. Clair Ave. W., Toronto, Canada, has been made a distributor for Baldwin-Lima-Hamilton Corp., Construction Equipment Division, Lima, Ohio. Baxter will handle Lima Austin-Western crushing, screening, and washing equipment in the Province of Ontario.

This equipment will be distributed in the Province of Quebec and in four counties of New Brunswick by Federal Equipment (Eastern) Ltd., 895 Montee de Liesse, St. Laurent, Montreal, with a branch office in Quebec City. Federal Equipment is also a distributor for Lima shovels, cranes, draglines, pullshovels and the Lima Roadpacker vibratory compactor.

In West Springfield, Mass., Tri-County Contractors Supply, Inc. at 1702 Riverdale Rd., has been named to distribute the Lima Austin-Western equipment in five Massachusetts counties.

New Linder parts manager

B. G. Kirby has been appointed to manage the parts department of Linder Industrial Machinery Co., Lakeland, Fla. The firm's line is Michigan earthmovers.

Distributor for Bil-Jax

Bil-Jax, Inc., Archbold, Ohio, has appointed Lincoln Contractor Supply Co., 11327 Lincoln Ave., Milwaukee, to be its distributor in the Milwaukee area. Lincoln will handle the firm's complete line of scaffolding, shoring, hoist towers, and related equipment.

Kwik-Mix names dealer

Star Machinery Co., 241 Lander St., Seattle, Wash., has been appointed by Kwik-Mix Co., Port Washington, Wis., a division of Koehring Co., to sell and service the complete line of Ka-Mo horizontal, angular, and vertical boring and drilling equipment. The dealer's territory includes 26 counties in western Washington.

Daybrook Hydraulic names distributors

Owens Body & Equipment Co., Main St., Casey, Ill., has been ma a new sales and service represent tive for truck equipment made Daybrook Hydraulic Division, You Spring & Wire Corp., Bowling Gre Ohio. Among the products hand will be aluminum and steel du bodies and telescopic and underbo hydraulic hoists. Owens will repres Daybrook equipment in seven centr Illinois counties, as well as the sou ern half of Shelby and the southea ern corner of Moultrie counties.

In Massachusetts, Olivier & Su 479 Mt. Pleasant St., New Bedfor has been named a distributor fo Daybrook. The company will servi Barnstable, Dukes, and Nantucke counties; the eastern half of Brist County; and the southern half o Plymouth County.

Simmons Garage & Equipment Co. 1373 Pridemore Court, Lexington Ky., will sell and service the complet line in 40 counties in the area.

Kelley Machine dealer

In the lower peninsula of Michigan Contractors Machinery Co., 581 Plainfield Ave., Grand Rapids, and 13200 North End, Detroit, has been appointed exclusive distributor for Kelley Machine Division, Buffalo, N. Y. The line of contractors' equipment comprises power trowels, power floats, portable space heaters, power tampers, and a new power buggy.

Ramset names Ram Tool as Pittsburgh dealer

The Ramset Fastening System, Winchester-Western Division, Olin Mathieson Chemical Corp., New Haven, Conn., has appointed Ram Tool, 330 Sampsonia St., Pittsburgh, Pa., as distributor of Ramset powder-actuated fastening tools in that area. Ram Tool has purchased the good will of the Koontz Equipment Co., the original Ramset outlet in Pittsburgh.

Worthington appoints

Construction equipment of the Worthington Corp., Harrison, N. J. will be distributed in Wisconsin by Adams Machinery Inc., 2016 W. Cornell, Milwaukee. Among the products handled will be mixers, pavers, etc.

Trailmobile to be dealer

Trailmobile, Inc., Cincinnati, is now exclusive distributor for the Mono Asbestolite trailer roof repair kit for all types of van trailers. Trailmobile will serve as exclusive distributor for the kit through its 55 factory-operated branches.

New dealer for Clyde

Boehck Construction Equipment Corp. of Milwaukee and Green Bay, Wis., is a new distributor of construction and material-handling equipment for Clyde Iron Works, Inc., Duluth, Minn.



Manufacturers of the big diesel trucks, that must stand up under hour-after-hour of gruelling service, have learned to rely upon MECHANICS Roller Bearing UNIVERSAL JOINTS to deliver hundreds of thousands of miles of trouble-free service. Because MECHANICS JOINTS drive through KEYS—instead of bolts—they stand up under punishment that shears off other types of fasteners. They are designed with less parts and connections for easy assembly and servicing—smooth running balance—maximum strength with less weight—and long, trouble-free, safe operation. Rugged stamina is just one of the advantages you get when you specify MECHANICS Roller Bearing UNIVERSAL JOINTS. Let MECHANICS engineers help you design this and other competitive sales features into your product's transmission train.

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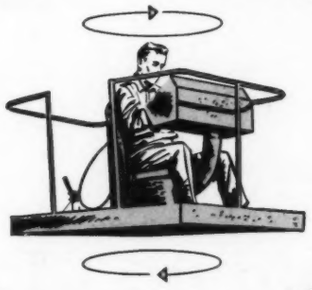
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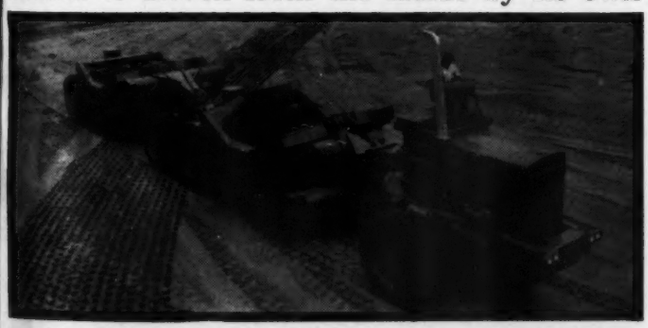
POWER PACKER



You'll be amazed at the *extra miles* of compacting you'll get hour after hour, day after day, with Series M 50-55 Power Packers! The reason is simple: This self-powered "sheepsfoot roller" works at a pace appreciably faster than its towed counterparts; and *you never turn around on the fill.*

More power is available for compacting because the Power Packer has to move no "idle" weight of a tow tractor. Each of its four roller drums is driven from the inside by its own electric motor and gear reduction. A diesel-electric generating plant automatically synchronizes the rollers at any of the infinite number of speeds you can select within the range.

Then, to travel in the other direction, merely swing the rotating seat and controls 180-degrees, spin a rheostat, and you're rolling! These quick-as-a-flash starts, stops, and reverses make working tight corners, or over slopes, quick and simple.



ELECTRIC DIGGER (Series L-50) is another Electric Wheel machine for contractors. It self loads 55 to 60 tons . . . drastically cuts dirtmoving cost.

It all adds up to more production per man hour — the surest way to stay competitive . . . and profitable. Learn how present owners are making Power Packers pay. Just let us know you're interested, and we'll send all the specifics. The address is:

R.G. LETOURNEAU INC

2756 S. MacArthur, Longview, Texas

E106



Michigan Dozer: *replaces 2 crawlers on fill*

Michigan Pusher: *eliminates crawler track costs*

Michigan Scraper: *delivers more loads per shift*

Production up 16%—profit up too

On Interstate work near Orlando, Florida, an enterprising contractor has boosted normal production ⅙ or more—cut his man-hour requirements—and upped profits.

The firm is L. A. Reynolds Co, Winston-Salem, N.C. Their job: an 850,000 yd double figure-eight interchange. Their key machines: three high-speed Michigans—a 262 hp Model 280 Tractor Dozer, a 375 hp Model 380 Tractor Dozer, and a 19-yd Model 210 Tractor Scraper.

Pusher loads alternately forward and reverse

The Model 380 Dozer accounted for much of the saving. Utilizing both front and rear push-blocks, it loaded scrapers in alternating directions, thus eliminated the wasted time of turns and backup. Rig serviced four scrapers with time to spare . . . regularly loaded and boosted each scraper out of the cut in under 1 minute. Load size in the sandy material ranged from 14 to 16 pay yards.

Dozer spreads 7,200 yds

Similar speed advantages were reported on the fill. Here, Reynolds' 56,000 lb Michigan Model 280 Dozer replaced *two* 50,000 lb class crawlers. It had no trouble keeping up with the four scrapers—spreading up to 7,200 pay yards per day along a ¼ mile long, 108 ft wide right-of-way.

More dirt, fewer dozers add up to more profit

But most important, perhaps, was the continuous profit story. Operator load-counts showed an average of five extra loads per 10-hour day for the power-shift, torque converter Michigan Scraper. Cross-section computations, Michigan Model 380 vs the 320 hp crawler-pusher formerly used, showed an extra pay yard per load for all scrapers. *In addition, with rubber-tired machines replacing crawlers, there were no track repairs.* And, more money was saved in operating costs, two dozers vs three.

Get the facts for *yourself*. Your Michigan Distributor will gladly demonstrate.

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